ORDER NO. KM40310263C3

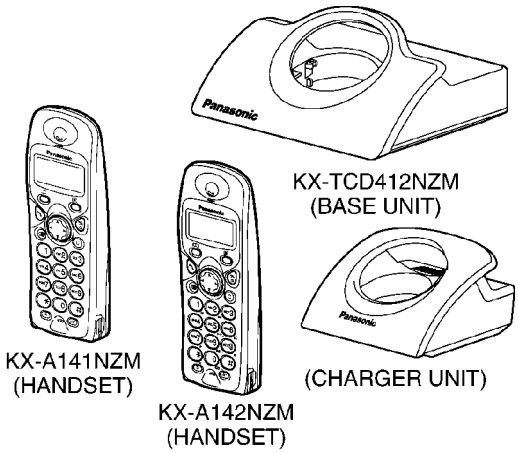
# Service Manual

## Telephone Equipment

Caller ID Compatible

## KX-TCD412NZM / KX-A141NZM / KX-A142NZM

## Digital Cordless Phone
## Metallic Gray Version
## (for New Zealand)




**Configuration for each model**

| Model No | Base Unit | Handset | Charger |
|---|---|---|---|
| KX-TCD412 | 1 | 2 (A141) | 1 |
| KX-A142 | | 1 | 1 |

KX-A142 is optional accessory, while a Handset supplied with a Base Unit is KX-A141.

## SPECIFICATIONS

**SPECIFICATION**

| | |
|---|---|
| Standard: | DECT= (Digital Enhanced Cordless Telecommunications) |
| Number of channels: | 120 Duplex Channels |
| Frequency range: | 1.88 GHz to 1.9 GHz |
| Duplex procedure: | TDMA (Time Division Multiple Access) |
| Channel spacing: | 1728 kHz |
| Bit rate spacing: | 1152 kbit/s |
| Modulation: | GFSK= (Gaussian Frequency Shift Keying) |
| RF Transmission Power: | approx. 250 mW |
| Voice coding: | ADPCM 32 kbit/s |
| Operation range: | Up to 300 m outdoors, Up to 50 m indoors |
| Analog telephone connection: | Telephone Line |
| Power source. | AC Adaptor (230 V - 240 V AC, 50/60 Hz) |

| | |
|---|---|
| Power consumption, Base Unit: | Standby: 2.5 W / Maximum: 6.8 W |
| Charger Unit: | Standby: 2.3 W / Maximum: 6.8 W |
| Battery life, Handset (if batteries are fully charged): | Stand-by: Up to 120 hours (Ni-MH) Talk: Up to 10 hours (Ni-MH) |
| Operating conditions: | 5 - 40 °C, 20 - 80 % relative air humidity (dry) |
| Dimensions, Base Unit (D x W x L): | 58 mm x 128 mm x 105 mm |
| Dimensions, Handset (D x W x L): | 143 mm x 48 mm x 32 mm |
| Dimensions, Charger Unit (D x W x L): | 60 mm x 86 mm x 84 mm |
| Weight, Base Unit: | about 170 g |
| Weight, Handset: | about 120 g |
| Weight, Charger Unit: | about 113 g |
| Connection jack: | RJ11 Plug |

Specifications are subject to change.
The illustrations used in this manual may differ slightly from the original device.

**IMPORTANT INFORMATION ABOUT LEAD FREE, (PbF), SOLDERING**
If lead free solder was used in the manufacture of this product the printed circuit boards will be marked PbF.
Standard leaded, (Pb), solder can be used as usual on boards without the PbF mark.
When this mark does appear please read and follow the special instructions described in this manual on the use of PbF and how it might be permissible to use Pb solder during service and repair work.

**© 2003 Panasonic Communications Co., Ltd. All rights reserved.**
**Unauthorized copying and distribution is a violation of law.**

**⚠ WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

When you note the serial number, write down all 11 digits. The serial number may be found on the bottom of the unit.

Panasonic

# 1. ABOUT LEAD FREE SOLDER (PbF: Pb free)

**Note:**
**In the information below, Pb, the symbol for lead in the periodic table of elements, will refer to standard solder or solder that contains lead.**
**We will use PbF solder when discussing the lead free solder used in our manufacturing process which is made from Tin (Sn), Silver (Ag), and Copper (Cu).**
**This model, and others like it, manufactured using lead free solder will have PbF stamped on the PCB. For service and repair work we suggest using the same type of solder although, with some precautions, standard Pb solder can also be used.**

**Caution**

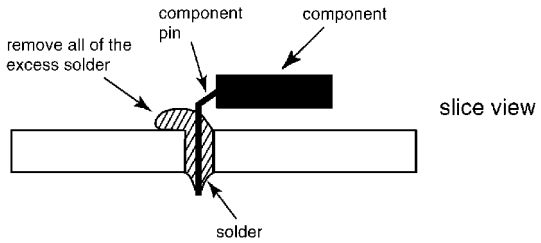
**- PbF solder has a melting point that is 50°F ~70°F (30°C ~ 40°C) higher than Pb solder. Please use a soldering iron with**

**temperature control and adjust it to 700°F ± 20°F (370°C ± 10°C). In case of using high temperature soldering iron, please be careful not to heat too long.**

**- PbF solder will tend to splash if it is heated much higher than its melting point, approximately 1100°F (600°C).**

**- If you must use Pb solder on a PCB manufactured using PbF solder, remove as much of the original PbF solder as possible and be sure that any remaining is melted prior to applying the Pb solder.**

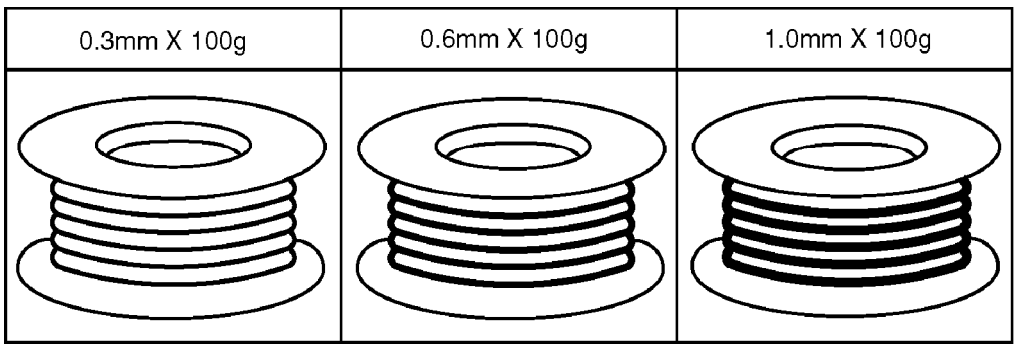
**- When applying PbF solder to double layered boards, please check the component side for excess which may flow onto the opposite side (See the figure below).**




## 1.1. Suggested PbF Solder

**There are several types of PbF solder available commercially. While this product is manufactured using Tin, Silver, and Copper (Sn+Ag+Cu), you can also use Tin and Copper (Sn+Cu) or Tin, Zinc, and Bismuth (Sn+Zn+Bi). Please check the manufacturer's specific instructions for the melting points of their products and any precautions for using their product with other materials.**

**The following lead free (PbF) solder wire sizes are recommended for service of this product: 0.3mm, 0.6mm and 1.0mm.**




## 1.2. How to recognize that Pb Free solder is used

### 1.2.1. Base Unit PCB

(Component View)

(Flow Solder Side View)

**Note:**
**The locations of the “PbF“ mark is subject to change without notice.**

### 1.2.2. Handset PCB

(Component View)

(Flow Solder Side View)

**Note:**
**The locations of the “PbF“ mark is subject to change without notice.**

### 1.2.3. Charger Unit PCB

**Note:**
**The locations of the “PbF“ mark is subject to change without notice.**

# 2. FOR SERVICE TECHNICIANS

**ICs and LSIs are vulnerable to static electricity.**

**When repairing, the following precautions will help prevent recurring malfunctions.**

**1. Cover the plastic parts boxes with aluminum foil.**

**2. Ground the soldering irons.**

**3. Use a conductive mat on the worktable.**

**4. Do not touch IC or LSI pins with bare fingers.**

# 3. CAUTION

**Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommendenced by the manufacturer.**
**Dispose of used batteries according to the manufacture’s Instructions.**

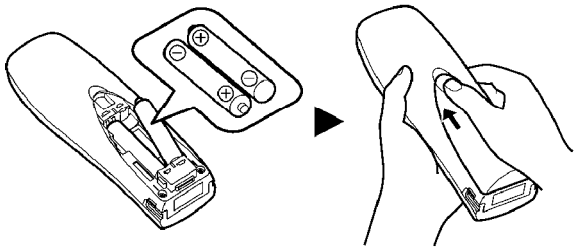
# 4. BATTERY

## 4.1. Battery Installation

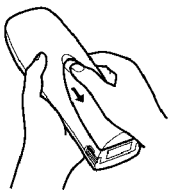
**Please ensure the batteries are inserted as shown. ⊖ part should be inserted first.**

**Close the cover as indicated by the arrow.**

**- When you replace the batteries, ⊕ part should be removed first.**

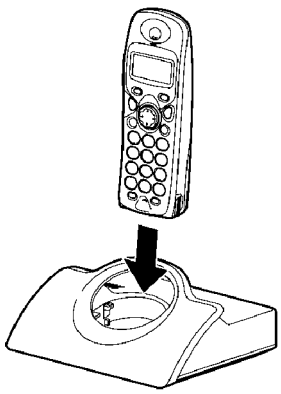


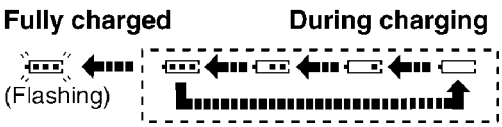
To replace the battery:
Press the notch on the cover firmly and slide it as indicated by the arrow. Replace 2 batteries and close the cover then charge the handset for about 7 hours.



## 4.2. Battery Charge

**At the time of shipment, the batteries are not charged. To charge, place the handset on the base unit.**
**Please charge the batteries for about 7 hours before initial use. During charging, the battery icon is as shown below.**






| Display icon | Battery strength |
|---|---|
| | High |
| | Medium |
| | Low |
| | Needs to be charged |

**The handset which power is off will be turned on automatically when it is placed on the base unit. In normal use, the handset and the base unit should be powered on at all times.**

**Note for Service:**
**The battery strength may not be indicated correctly if the battery is disconnected and connected again, even after it is fully charged.**
**In that case, by recharging the battery as mentioned above, you will get a correct indication of the battery strength.**

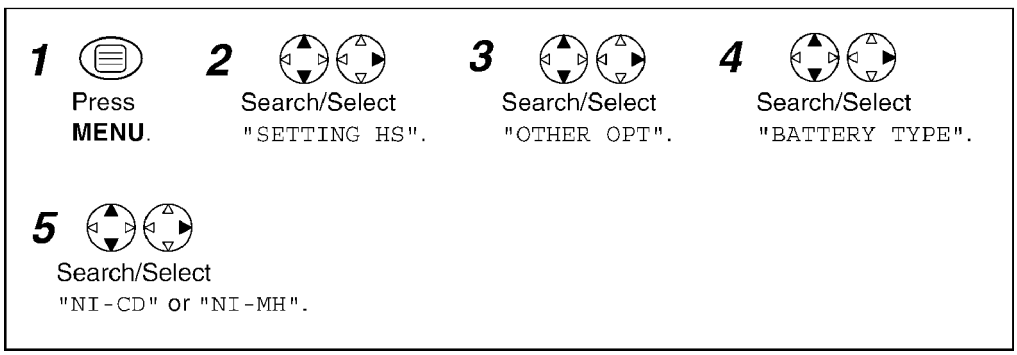
## 4.3. Battery Life

- **Battery life is dependent on use and conditions but in general when using fully charged Ni-MH batteries (700 mAh):**
  **Talk time: 10hrs approx.**
  **Standby time: 120hrs approx.**
- **When using Ni-Cd batteries (250 mAh):**
  **Talk time: 4hrs approx.**
  **Standby time: 40hrs approx.**
  **(Times indicated are for peak performance)**
- **The batteries reach peak performance after several full charge/ discharge cycles.**
- **The batteries cannot be overcharged unless they are repeatedly removed and replaced.**
- **If battery life is shortened then please check that battery and charge terminals are clean.**
- **For maximum battery life, it is recommended that the handset is not recharged until battery icon flashes** .

## 4.4. Replacing the Batteries

**If the** **icon flashes after a few telephone calls even when the handset batteries have been fully charged, 2 batteries must be replaced.**
**Charge new batteries for approximately 7 hours before initial use.**
**(The telephone line cord must not be connected to the telephone socket at this time).**
**When replacing the batteries, ensure that the correct battery type is selected.**

**Selecting the Battery Type**



**- To exit the operation, press** **any time.**

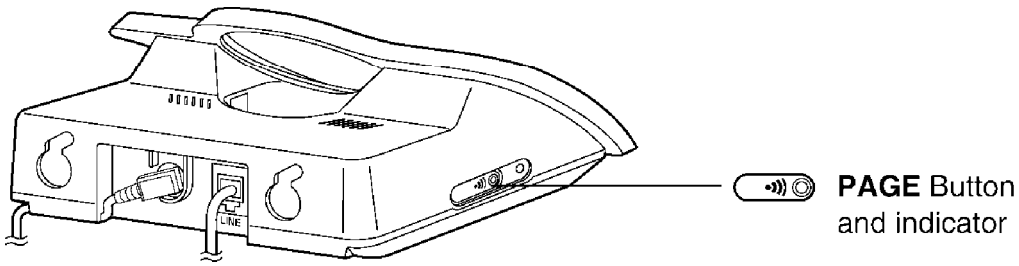
**- When Ni-Cd batteies are fitted with the "BATTERY TYPE" setting in "NI-MH",** **icon will disappear and stop charging even if the handset is on the cradle.**

**- Do not use non-rechargeable batteries. If non-rechargeable batteries are fitted and start charging, it may cause the leakage of the battery electrolyte.**

**Please use only Panasonic P03P(Ni-MH) or P03H(Ni-Cd) batteries.**

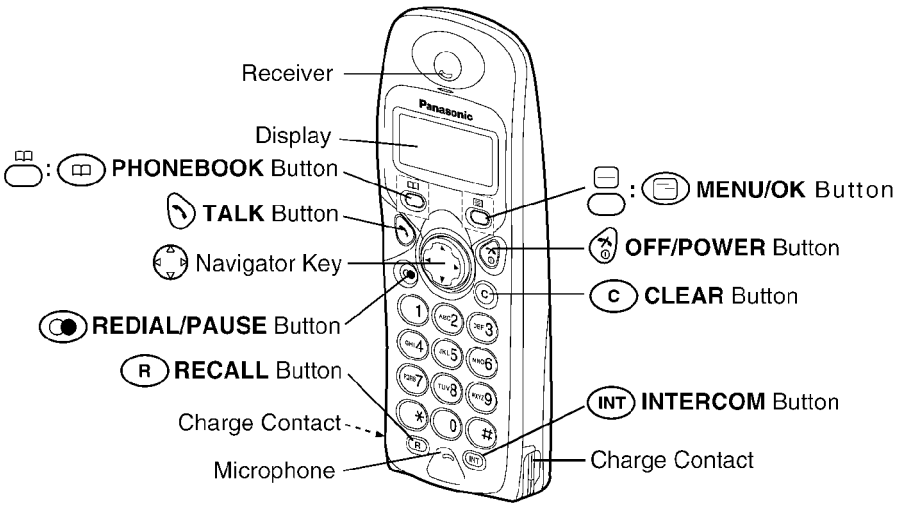
# 5. LOCATION OF CONTROLS

## 5.1. Base Unit

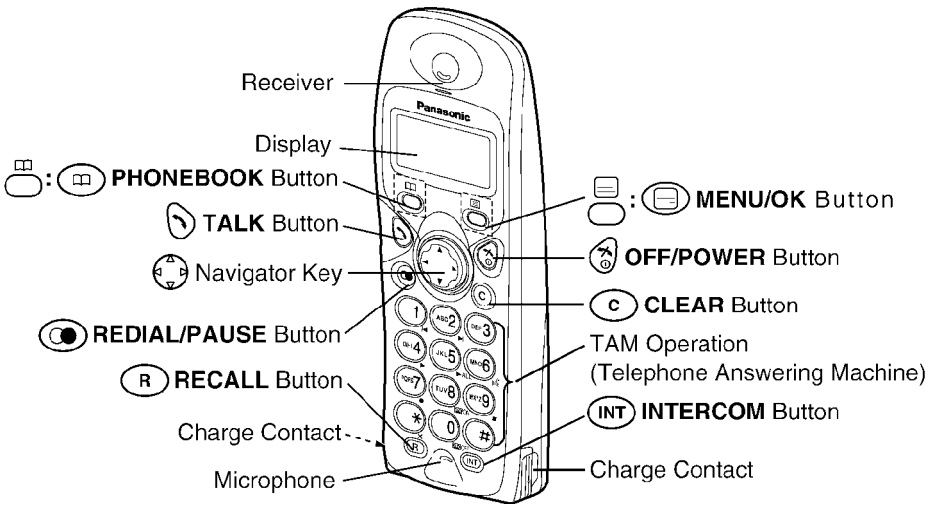



## 5.2. Handset

**(For KX-A141NZM)**




**(For KX-A142NZM)**

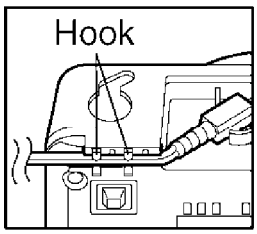



# 6. SETTINGS

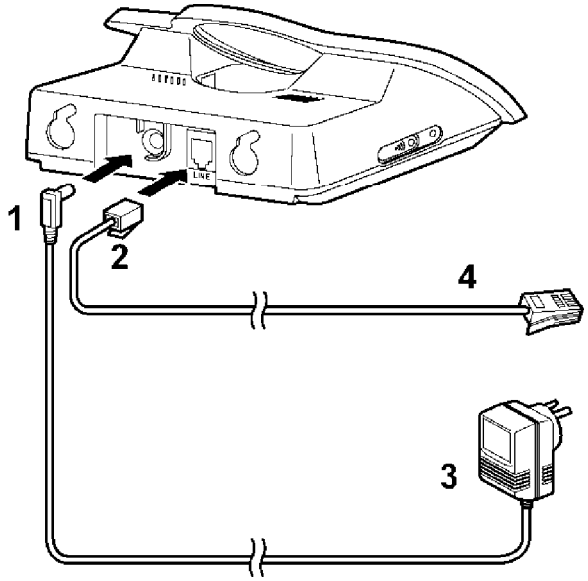
## 6.1. Connection

### 6.1.1. Base Unit

**Plug in the AC adaptor and the telephone line cord in order 1, 2, 3, 4.**




Fasten the AC adaptor cord to prevent it from being disconnected.

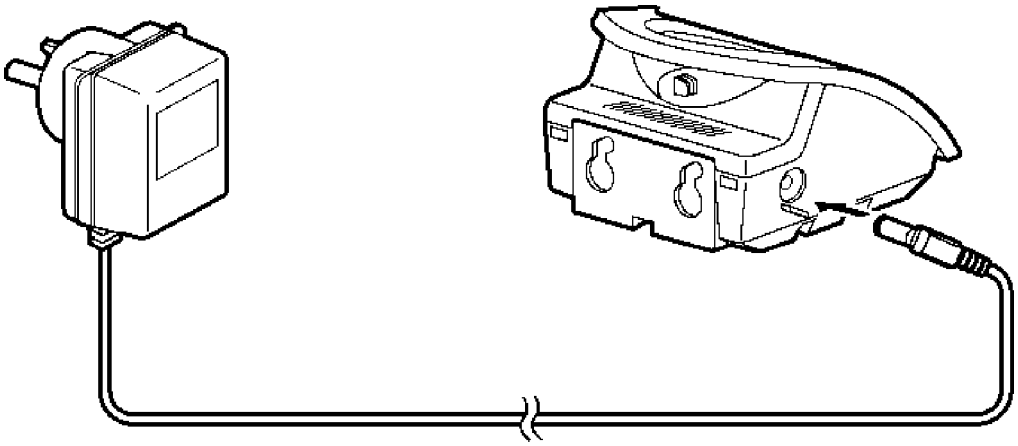



**The AC adaptor must remain connected at all times (It is normal for the adaptor to feel warm during use).**

**- Never install telephone wiring during a lightning storm.**

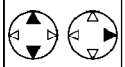
**- The telephone will not work during a power failure. We therefore recommend you use a standard telephone and T Adaptor to connect this Digital Cordless Phone to the line. Your Panasonic Sales Shop can offer you more information about connection possibilities.**

### 6.1.2. Charger Unit



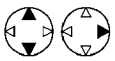
**The AC adaptor must remain connected at all times (It is normal for the adaptor to feel warm during use).**

## 6.2. Symbols Used in This Service Manual

| Symbol | Meaning |
|---|---|
| | To search the desired item, press **UP** or **DOWN**. |
| | To select the desired item, press **RIGHT**. |
|  | To search and then to select the desired item, press **UP** or **DOWN** then **RIGHT**. |
| | To move the cursor to the right or to the left, press **RIGHT** or **LEFT**. |
| ➧ | To go to the next step. |
| " " | The words in " " indicate the words in display. |

## 6.3. PIN Code

### 6.3.1. Base Unit

**1** Press **MENU**. **2**  Search/Select "SETTING BS". ➧ "INPUT CODE"

**3** **4*** **Current 4-digit Base Unit PIN**

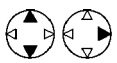
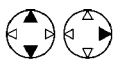
**5** **New 4-digit Base Unit PIN** **6** **New 4-digit Base Unit PIN again to verify**

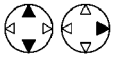
**- To exit the operation, press** **any time.**

**For Service Hint:**

*** : If the current 4-digit PIN is forgotten, press** **and you will be able to enter new PIN.**

### 6.3.2. Handset

**1** Press **MENU**. **2**  Search/Select "SETTING HS". **3**  Search/Select "OTHER OPT".

**4**  Search/Select "HSPIN CHANGE". **5*** **Current 4-digit Handset PIN**

**6** **New 4-digit Handset PIN** **7** **New 4-digit Handset PIN again to verify**

- To exit the operation, press any time.

**For Service Hint:**

*** : If the current 4-digit PIN is forgotten, press** **and you will be able to enter new PIN.**

### 6.3.3. Reset Base Unit PIN to Default (0000) -When There is NO Handset Registered-

#### 6.3.3.1. Symptom

**There is no way to reset base PIN when there is no handset registered to the base.**

#### 6.3.3.2. Thinkable Situation

- Customer may ask to reset base PIN because they forget it.
- Customer may bring only a base unit for repair and there is no handset registered to the base (Need to register another handset to the base to confirm if the unit works properly after repair).
- When original handset has broken and customer purchased a new one, if customer forget base PIN, customer cannot register the new handset and may ask to reset the PIN.

#### 6.3.3.3. Remedy

**<Preparation>**

**Refer to JIGs and PC ().**

**<Connection>**

1. Solder a pin or lead wire to GND, SDA, and SCLK on base PCB.
2. Plug in AC adaptor to the base.
3. Turn on the power to the JIG (9V).
4. Then connect the cable to each pins using clip.

**As for the connection between JIG and PCB, see below photos.**

**<PC setting and how to reset base PIN to default (0000)>**

1. Refer to PC Setting ().

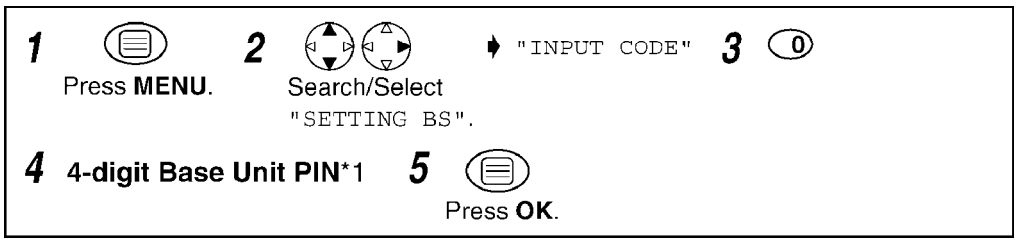
2. Next, execute <initbspin.bat> by typing "initbspin". The PC display will be shown as below.

3. After that, turn off DC power supply (9V) to the jig, unplug AC adaptor, and remove pins on PCB.
   Then close the cabinet. The base pin returns to the default (0000) and you can register a handset to the base using the base PIN (0000).

## 6.4. Reset

### 6.4.1. Base Unit

**If the base unit is reset, the Caller ID list will clear.**



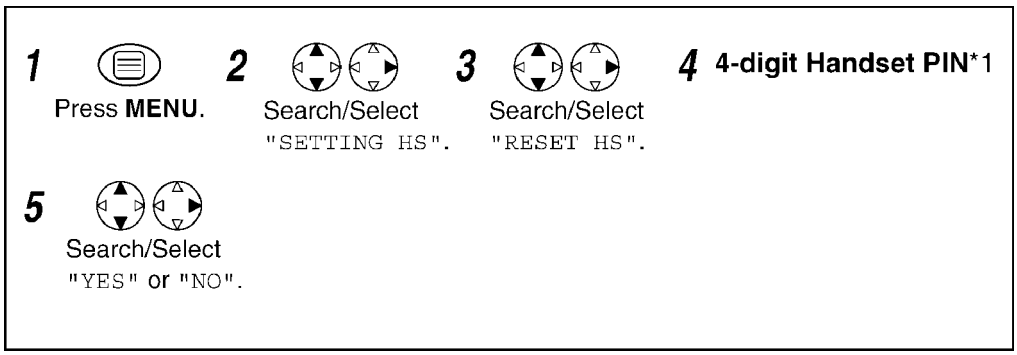

- To exit the operation, press any time.
- *1: The factory preset is 0000.

**Base Unit Initial Settings**

| Function | Initial Setting | Remarks (selectable o |
|---|---|---|
| Ringer Mode | All Handsets | All Handsets/Specific Han |
| Number of Rings | 3 | Up to 6 rings |
| Flash Timing | 600 msec | 100 msec/600 msec |
| Pause Timing | 3 seconds | 3 seconds/5 seconds |
| Call Restricted Handsets | All Clear | Each Handset can be set indivisually. |
| Call Restriction Numbers | All Clear | Up to 10 numbers (up to 8 |
| 4-Digit Base Unit PIN | 0000 | - |

### 6.4.2. Handset

**You can reset all of the handset settings to their initial settings.**




**- To exit the operation, press any time.**

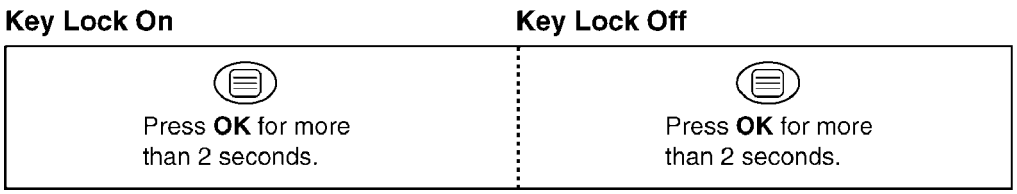
**- *1: The factory preset is 0000.**

**Handset Initial Settings**

| Function | Initial Setting | Remarks (selectable o |
|---|---|---|
| Time Alarm Mode | OFF | OFF/ON |
| Alarm Time | Clear | OFF/Once/Daily |
| Handset Ringer Volume | 6 | - |
| Handset External Ringer Pattern | 1 | 20 patterns |
| Handset Internal Ringer Pattern | 1 | 20 patterns |
| Handset Paging Tone Pattern | 1 | 20 patterns |
| Handset Alarm Tone Pattern | 1 | 20 patterns |
| Key Tone | ON | ON/OFF |
| Call Waiting Tone | ON | ON/OFF |
| Range Warning Alarm | OFF | OFF/ON |
| Battery Low Alarm | ON | ON/OFF |
| Standby Mode Display | Clock | Clock/OFF/Base No./Hand |
| Talk Mode Display | Length of the Call | Talk Time/Phone No. |
| Display Language | English | 10 languages |
| Call BAR | OFF | OFF/ON |
| Direct Call Mode | OFF | OFF/ON |
| Direct Call Number | Clear | Up to 24 digits |
| 4-Digit Handset PIN | 0000 | - |
| Auto Talk | OFF | OFF/ON |
| Base Unit Access | Automatic Base Unit Access | Auto/Specific Base Unit N |
| Redial Memory | All Clear | - |
| Handset Receiver Volume | Medium | Low/Medium/High |

## 6.5. Key Lock

**You can lock the handset dialling buttons. Only incoming calls are accepted while the key lock is on. The key lock is cancelled if the handset is turned off.**
**When the key lock is on, emergency calls cannot be made until key lock is cancelled.**




- is displayed (Refer to Handset Display ()) and all dialling buttons are locked.

## 6.6. Recall Feature

**RECALL is used to access special telephone services. Contact your Network provider for details. If your unit is connected to a PBX, pressing RECALL allows you to access some features of your host PBX such as transferring an extension call.**

## 6.7. Dialling Pause for PBX line/long distance service users

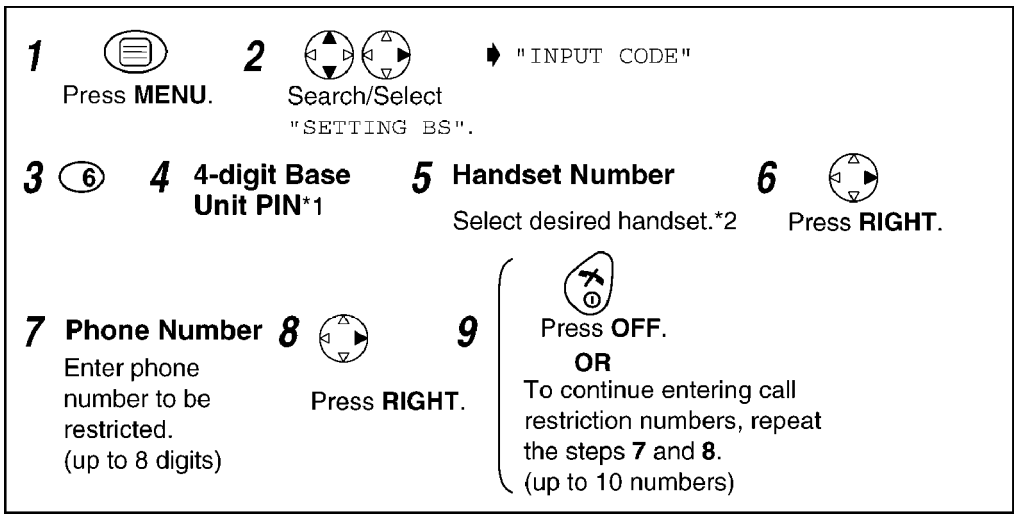
**A dialling pause is used when a pause in the dialling of the phone number is necessary using a PBX or accessing a long distance service.**
**For example, when 9 (line access number) is dialled followed by a pause to access an outside line through a PBX:**

- Entering a pause prevents misdialling when you redial or dial a stored number.
- Pressing PAUSE once creates one pause. To extend the pause requirement time, press PAUSE accordingly.

***1 is displayed (Refer to Handset Display ()) on the LCD.**

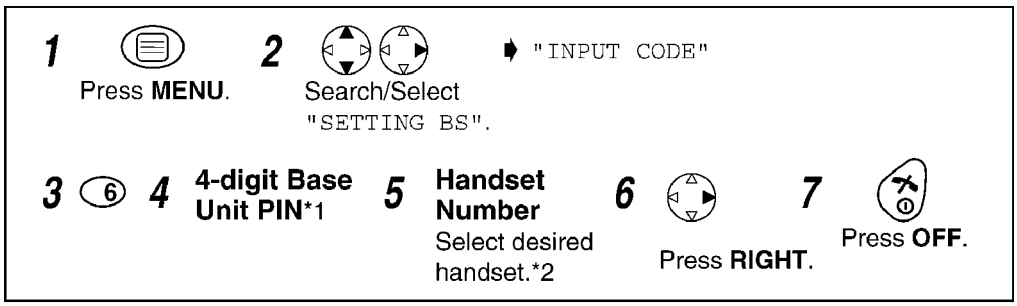
## 6.8. Call Restriction

**You can restrict selected handset(s) from dialling selected phone numbers. You can assign up to 10 call restriction numbers (up to 8 digits). If you dial a restricted number, the call does not connect and restricted number flashes.**




**- To exit the operation, press any time.**
**- *1: The factory preset is 0000.**
**- *2: The selected handset number flashes.**

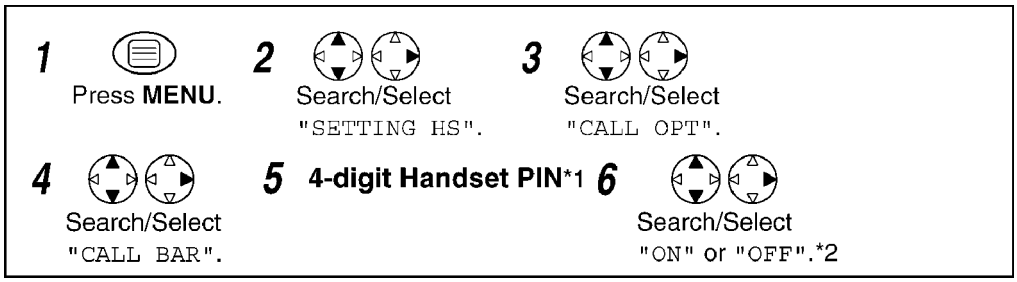
## 6.9. Cancelling Call Restricted Handset(s)

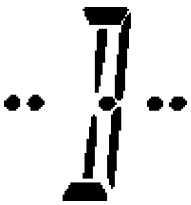


- To exit the operation, press any time.
- *1: The factory preset is 0000.
- *2: The selected handset(s) will stop flashing.

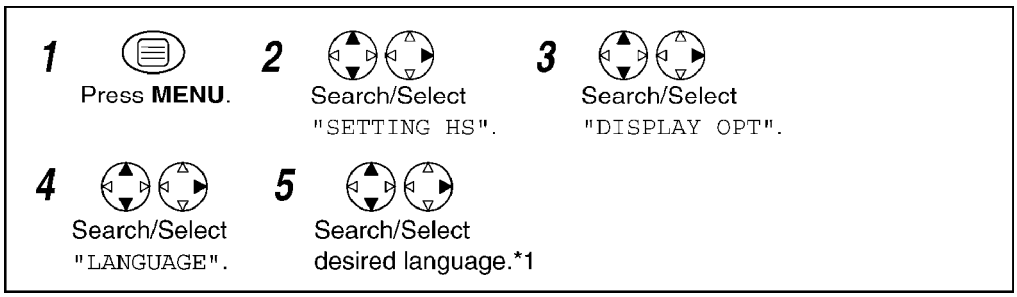
## 6.10. Call BAR On/Off (Call Prohibition On/Off)

**You cannot make any dialling if call BAR is on.**




- To exit the operation, press any time.
- *1: The factory preset is 0000.
- *2: If "ON" is selected,  is dispalayed (Refer to Handset Display ()).

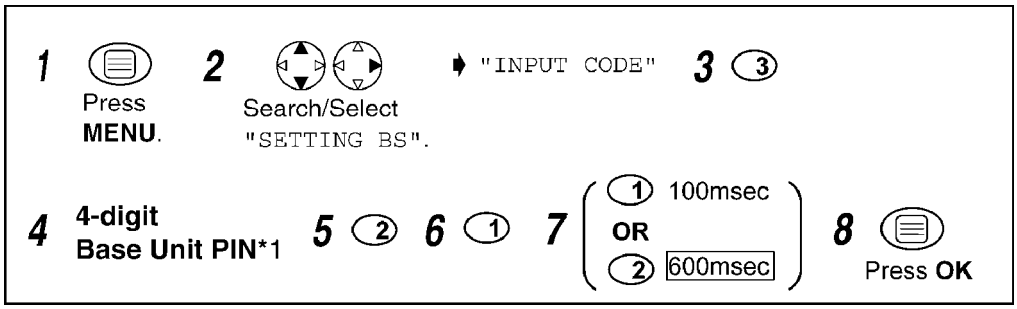
## 6.11. Selecting the Display Language



- To exit the operation, press any time.
- *1 You can select one of 10 languages. If you set a language you cannot read, reset the handset to its initial settings.
  Press MENU → DOWN → RIGHT → UP → RIGHT → 4-digit Handset PIN → UP → OK
  All handset setting will be reset to their initial settings, however, the Phonebook data will be saved.

## 6.12. Select Flash Timing

**You can select the flash timing, 100 msec (milliseconds), or 600 msec depending on your PBX requirements.**




- To exit the operation, press any time.
- *1: The factory preset is 0000.

**For Service Hint: Refer to Flash Time setting ()**

# 7. DISPLAY

## 7.1. Handset Display

| Icon | Displays | Icon | Displays |
|---|---|---|---|
| | Within range of a base unit | | Call Bar ON |
| | Out of range/No registration /No power on base unit | | Direct Call ON |
| | Paging or using the handset | | Key Lock ON |
| | Making or answering calls | | Ringer Volume OFF |
| | Phonebook Mode | | Dialling Pause |
| | In Setting Mode | | |
| | Battery strength is low | | |
| | Battery strength is high | | |

**For Service Hint:**

**icon will be displayed if the unit took a signal from Telephone Company as a Voice Message signal.**
**In that case, press the left button of the Navigator Key for a while.**

## 7.2. Before Requesting Help (Troubleshooting)

**If you experience any problems with the normal use of your apparatus, you should unplug it from the telephone outlet and connect a known working telephone in its place.**
**If the known working telephone still has problems, then please contact the customer service department of your Network provider.**
**If it operates correctly, then the problem is likely to be a fault in your apparatus.**
**In this case, contact your supplier for advice. Your Network provider may charge you if they attend a service call that is not due to apparatus supplied by them.**
**Turn the power OFF then ON (Handset) / Disconnect then connect the AC adaptor (Base Unit).**

| Problem | Possible cause | Solution |
|---|---|---|
| NO LCD display in handset. | • Handset not turned on. | • Turn on power.<br>→(Refer to **Power On/Off**.) |
| Handset will not turn on. | • Batteries not inserted.<br>• Batteries not charged. | • Insert the 2 rechargeable batteries supplied .<br>• Place handset in base and connect AC adaptor to base and AC outlet (full charge period 7 hrs). |
| Batteries charge icon not counting up. | • Dirty charge contact.<br>• Base not powered up. | • Clean charge / battery contact and retry charge.<br>• Connect AC adaptor to base unit and AC outlet. |
| icon flashes. | • Handset not registered to base.<br>• Handset out of range of base.<br>• No power into base unit. | • Register handset to base.<br>• Move handset closer to base.<br>• Connect AC adaptor to base unit and AC outlet. |
| Handset busy tone heard when is pressed. | • Handset out of range of base.<br>• Another handset in use. | • Move handset closer to base.<br>• Wait for the other user to complete call. |
| No dial tone. | • Telephone line not connected. | • Insert telephone cord to network.<br>• Turn power OFF then ON. |
| Cannot dial out. | • Call BAR set.<br>• Particular dialled number is restricted.<br>• Key lock mode ON. | • Turn feature off.<br>→(Refer to **Call BAR On/Off**.)<br>• Remove number from call restricted list.<br>→(Refer to **Call Restriction**.)<br>• Turn key lock OFF.<br>→(Refer to **Key Lock**.) |
| Handset will not ring. | • Ringer switched off. | • Set ringer to one of 6 volume levels. |
| Last number redial does not work. | • Number exceeded 24 digits. | • Redial manually. |
| No Caller ID number displayed. | • Service not supplied.<br>• Caller has withheld info. | • Caller ID service must be arranged with Network provider. |
| icon flashes. | • Battery low. | • Recharge batteries. |
| icon is disapeared. | • Wrong battery type selected. | • Set the correct battery type. |
| Cannot register handset to base. | • Max. number of bases already registered to handset.<br>• Max. number of handsets already registered to base unit.<br>• Wrong PIN number entered (Default 0000).<br>• Electrical noise in local area. | • Delete unused base registrations from handset.<br>• Delete unused handset registrations from base.<br>• If PIN number is lost, contact the Panasonic Service Centre.<br>→(Refer to **PIN Code**.)<br>• Move base/handset away from sources of electrical noise (e.g TV, radio ). |

**Cross Reference:**

**Power On/Off ()**

**Call BAR On/Off (Call Prohibition On/Off) ()**

**Call Restriction ()**

**Key Lock ()**

**PIN Code ()**

# 8. OPERATIONS

## 8.1. Power On/Off

| Power on | Power off |
|---|---|
| Press for more than 1 second. *1 | Press for more than 2 seconds. *2 |

*1 When button is released, the display changes to the standby mode.
*2 The display goes blank.

## 8.2. Making a Call

| Pre-dialling | Post-dialling |
|---|---|
| 1 Phone Number *1 2 Press **TALK**. | 1 Press **TALK**. 2 Phone Number |

*1 If you need correction, press CLEAR. Digit is cleared to the left, then enter numbers.

## 8.3. Answering a Call

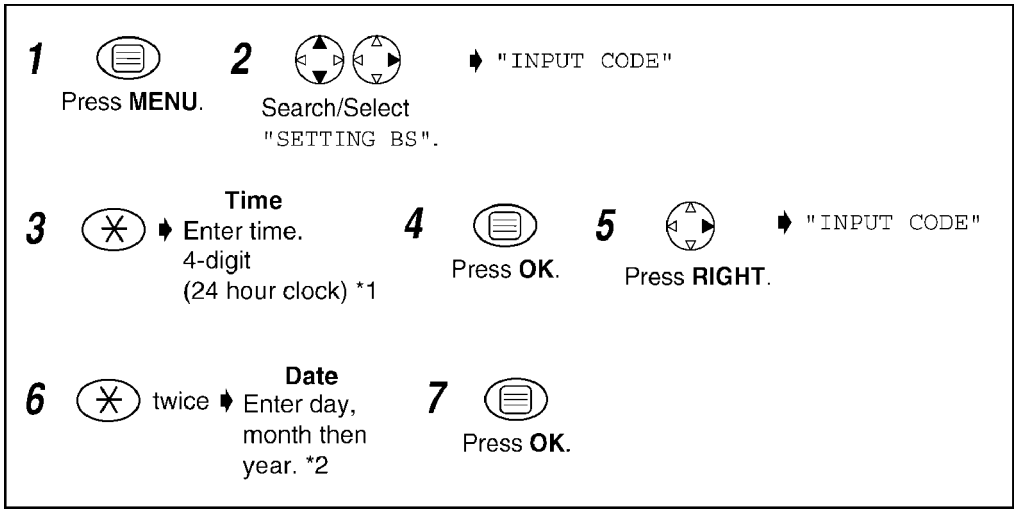
| | Terminating a Call |
|---|---|
| Press **TALK**. *1 | (During a call) Press **POWER OFF**. |

**- Each ringer will start ringing with lower volume then gradually increase the volume when receiving a call.**

*1 You can also answer a call by pressing any dialling button, INTERCOM, , or .

## 8.4. Setting the Clock/Date

After a mains power failure the clock needs to be reset. Ensure that icon is not flashing.




**- To exit the operation, press any time.**

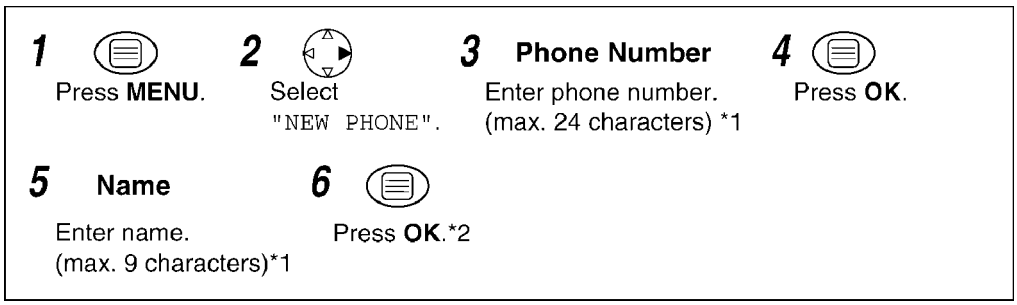
***1 For example, to set 7:15, enter 0715.**

***2 For example, to set the 16th of February, 2003, enter 160203.**

## 8.5. Phonebook

**You can store up to 20 caller information in the phonebook. If you received a call from the same phone number you stored with a name in the phonebook, the display will show the caller's name.**

### 8.5.1. Storing a Caller Information




**- To exit the operation, press any time.**

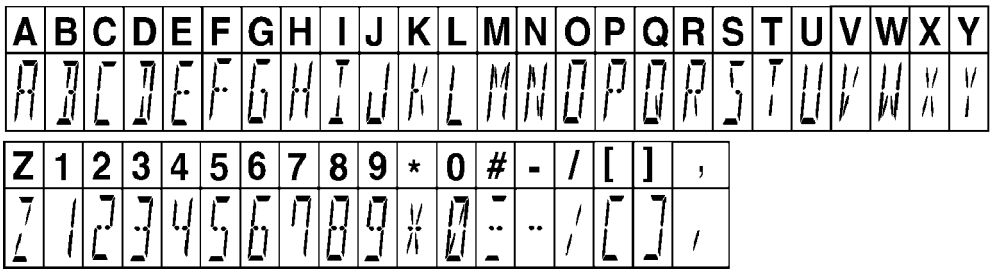
***1 If you need correction, press RIGHT or LEFT to move cursor then clear a character by pressing CLEAR, and/or enter characters. Characters are cleared or added to the left of the flashing character. To enter characters, see Character Selection below.**

***2 To continue storing another caller information, repeat the steps from 3.**

### Character Selection

| Keys | Number of times key is pressed | | | | | | | | Keys | Number of times key is pressed | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | 1 | 2 | 3 | 4 | 5 |
| 1 | # | [ | ] | * | , | - | / | 1 | 6 | M | N | O | 6 | |
| 2 | A | B | C | 2 | | | | | 7 | P | Q | R | S | 7 |
| 3 | D | E | F | 3 | | | | | 8 | T | U | V | 8 | |
| 4 | G | H | I | 4 | | | | | 9 | W | X | Y | Z | 9 |
| 5 | J | K | L | 5 | | | | | 0 | Blank | 0 | | | |

### Character Table




### Editing a Caller Information

**1** Press **PHONEBOOK**.*1

**2** Search/Select desired item.

**3** Select"EDIT".

**4** The 1st digit of the desired phone number blinks.

**<Phone Number>**

**5** Move cursor.

**6** Press **CLEAR**.*2

**AND/ OR**

**Number** Edit the phone number.*3

**7** Press **OK**.

**<Name>**

**8** Move cursor.

**9** Press **CLEAR**.*2

**AND/ OR**

**Name** Edit the name.*4

**10** Press **OK**.

### Clearing a Caller Information

**1** Press **PHONEBOOK**.*1

Search/Select desired item.

Search/Select "CLEAR".

**4** Search/Select "YES".*5

### Dialling with the Phonebook

**1** Press **PHONEBOOK**.*1

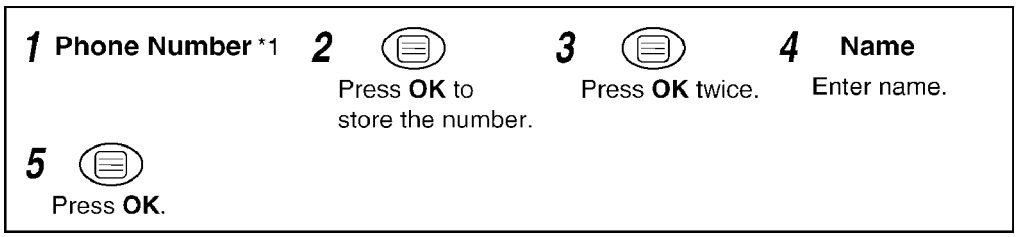
**2** Search desired item.

**3** Press **TALK**.

**- To exit the operation, press any time.**

***1 If there is no item stored in the phonebook, the display shows "NO ITEM".**
***2 Digits are cleared to the left of the flashing digit.**
***3 Digits are added to the left of the flashing digit. If you need to clear or add more than one digit, repeat the steps from 5.**
***4 Characters are added to the left of the flashing character. If you need to clear or add more than one character, repeat the steps from 8.**
***5 To continue clearing another caller information, repeat the steps from 2.**

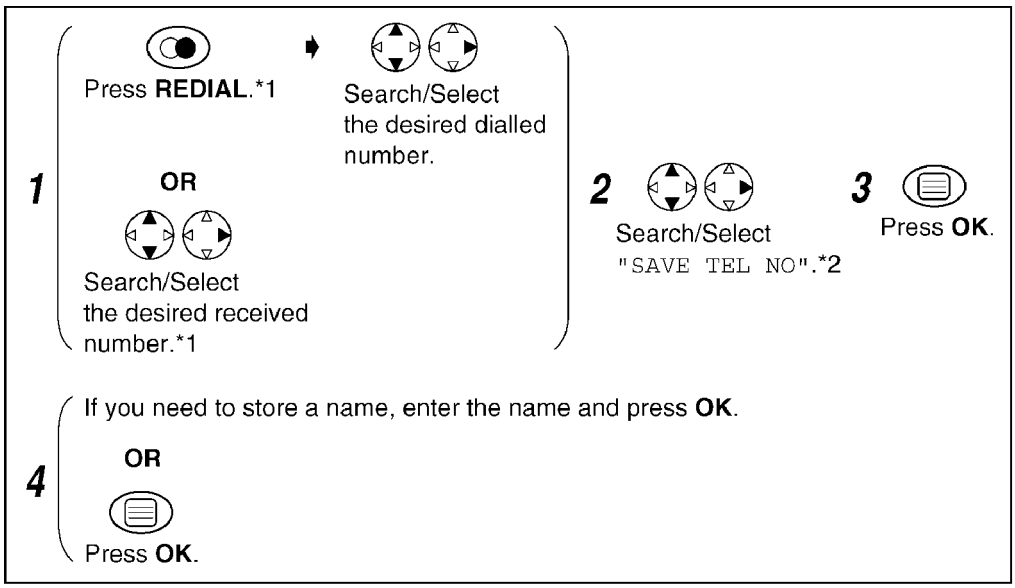
### 8.5.2. Storing the Phone Number into the Phonebook When Pre-dialling




**- To exit the operation, press any time.**

***1 If you need correction, press CLEAR. Digit is cleared to the left, then enter numbers.**

### 8.5.3. Storing the Number from the Redial/Caller List into the Phonebook




**- To exit the operation, press any time.**

***1 If there is no item stored in the redial/caller list, the display shows**

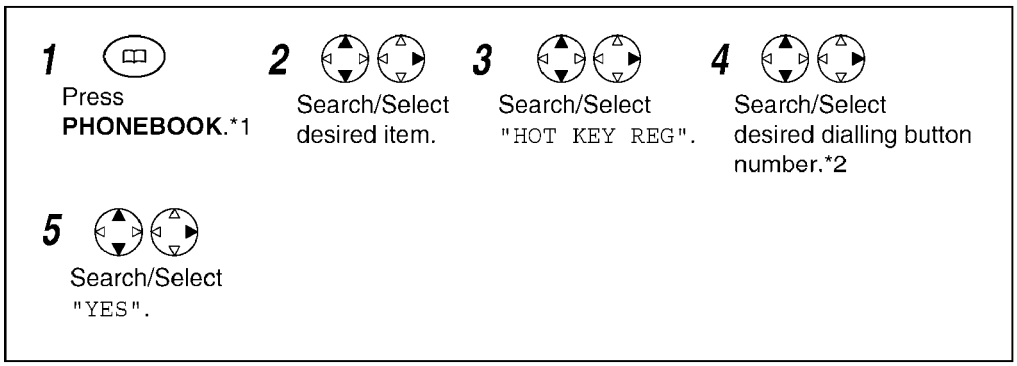
"NO ITEM".

***2 If you need correction, press RIGHT or LEFT to move cursor then clear a character by pressing CLEAR, and/or enter digits. Digits are cleared or added to the left of the flashing digit.**

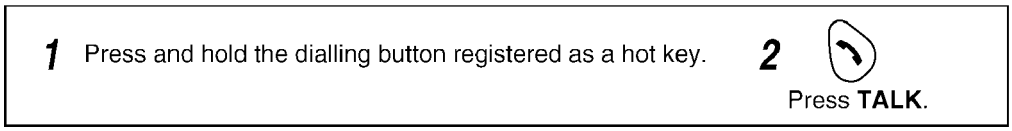
### 8.5.4. Hot Key (: Speed Dial)

**You can assign the dialling buttons 1 through 9 as hot keys. You can choose 9 phone numbers from the phonebook.**

**Registering a Phone Number as a Hot Key**




**Dialling with Hot Key**




**Clearing the Hot Key Registration**

**- To exit the operation, press any time.**

***1 If there is no item stored in the phonebook, the display shows** "NO ITEM".

***2 The number is flashing if the dialling button is already assigned as a hot key.**

***3 Phonebook registration will be remained even hot key registration is cleared.**

# 9. DISASSEMBLY INSTRUCTIONS

## 9.1. Base Unit

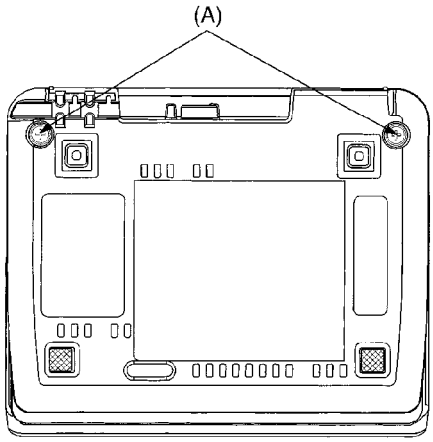



Fig. 1

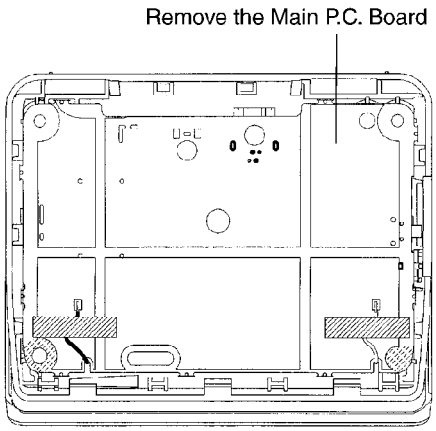



Fig. 2

| Shown in Fig.- | To Remove | Remove |
|---|---|---|
| 1 | Lower Cabinet | Screws (2.6 × 12).....(A) × 2 |
| 2 | Main P.C. Board | Main P.C. Board |

## 9.2. Handset

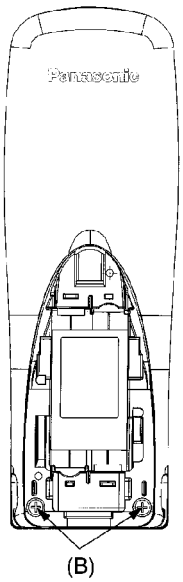



Fig. 3

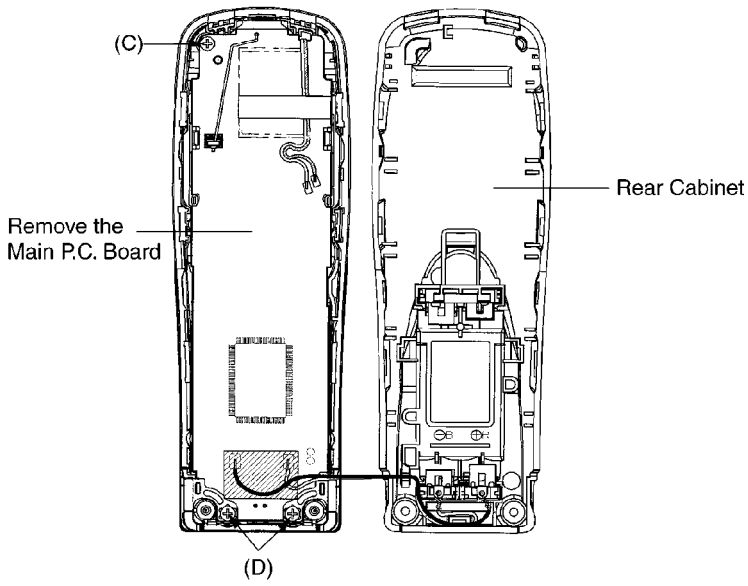



Fig. 4

| Shown in Fig.- | To Remove | Remove |
|---|---|---|
| 3 | Rear Cabinet | Screws (2 × 10).....(B) × 2 |
| 4 | Main P.C. Board | Screw (2 × 8).....(C) × 1 |
| | | Screws (2 × 8).....(D) × 2 |
| | | Main P.C. Board |

## 9.3. Charger Unit

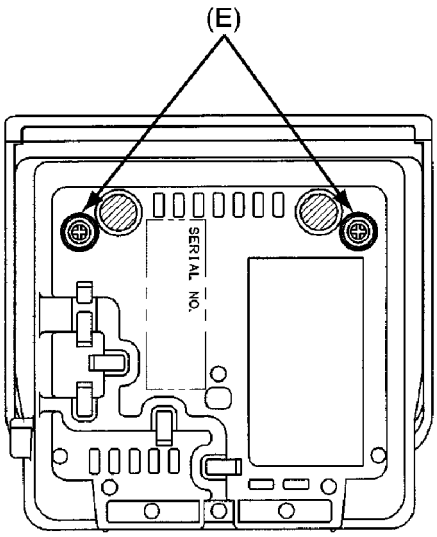



Fig. 5

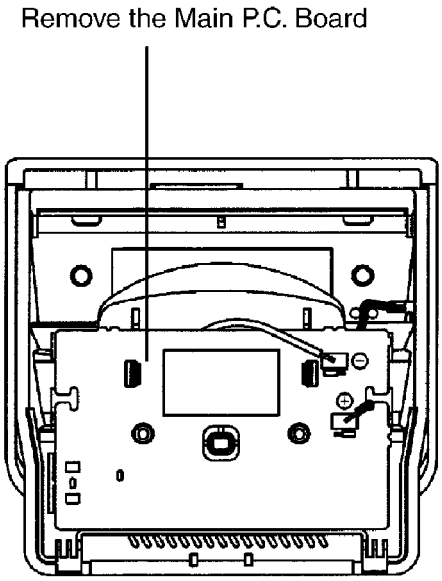



Fig. 6

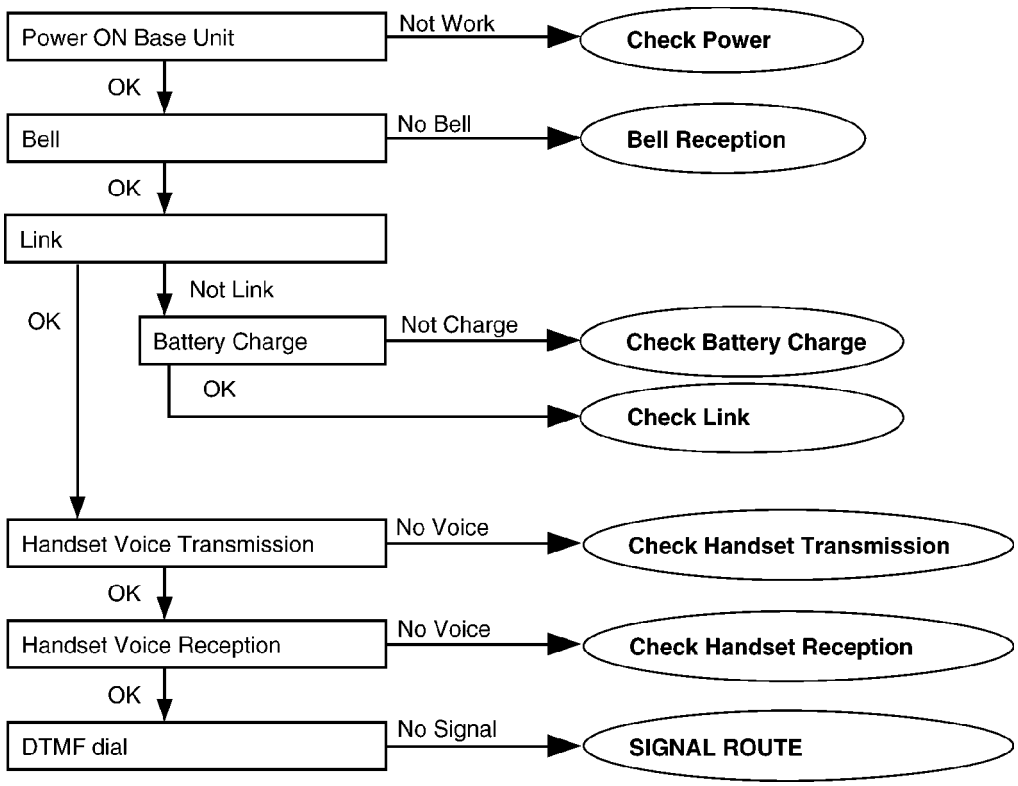
| Shown in Fig.- | To Remove | Remove |
|---|---|---|
| 5 | Lower Cabinet | Screws (2.6 × 14).....(E) × 2 |
| 6 | Main P.C. Board | Main P.C. Board |

# 10. ASSEMBLY INSTRUCTIONS

## 10.1. Warning When Constructing the Base Unit

# 11. TROUBLESHOOTING GUIDE

**Flow Chart**

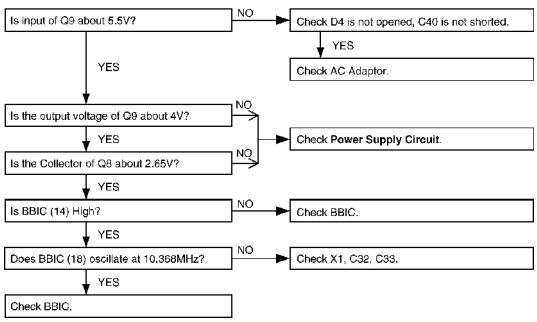



**Cross Reference:**
**Check Power ()**
**Bell Reception ()**
**Check Battery Charge ()**
**Check Link ()**
**Check Handset Transmission ()**
**Check Handset Reception ()**
**SIGNAL ROUTE ()**

# 11.1. Check Power

## 11.1.1. Base Unit

**Is the AC Adaptor inserted into AC outlet? (Check AC Adaptor's specification.)**

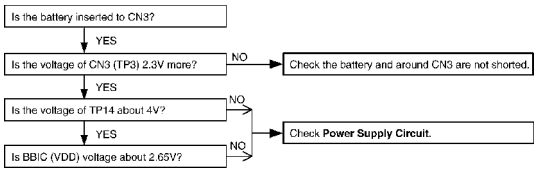



**Cross Reference**

**Power Supply Circuit ()**

**Note:**
**BBIC is IC2.**

### 11.1.2. Handset

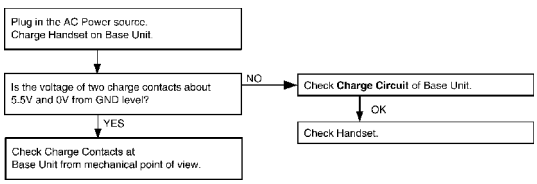



**Cross Reference**
**Power Supply Circuit/Reset Circuit ()**

**Note:**
**BBIC is IC1.**

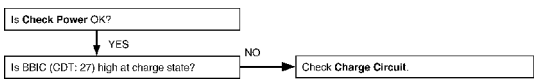
## 11.2. Check Battery Charge

### 11.2.1. Base Unit


Plug in the AC Power source.
Charge Handset on Base Unit
Is the voltage of two charge contacts about 5.5V and 0V from GND level?
NO
Check Charge Circuit of Base Unit.
OK
Check Handset.
YES
Check Charge Contacts at Base Unit from mechanical point of view.

**Cross Reference:**
**Charge Circuit ()**

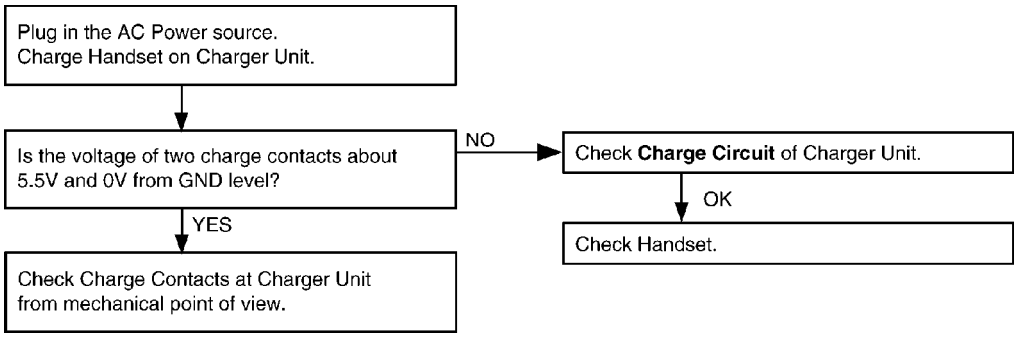
### 11.2.2. Handset




**Cross Reference:**
**Check Power ()**
**Charge Circuit ()**

**Note:**
**BBIC is IC1.**

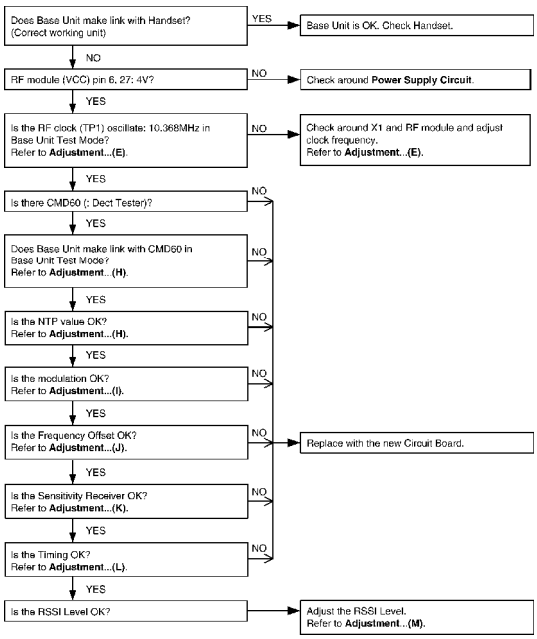
### 11.2.3. Charger Unit


Plug in the AC Power source.
Charge Handset on Charger Unit.
Is the voltage of two charge contacts about 5.5V and 0V from GND level?
NO
Check Charge Circuit of Charger Unit.
OK
Check Handset.
YES
Check Charge Contacts at Charger Unit from mechanical point of view.

**Cross Reference:**
**Power Supply Circuit ()**

## 11.3. Check Link

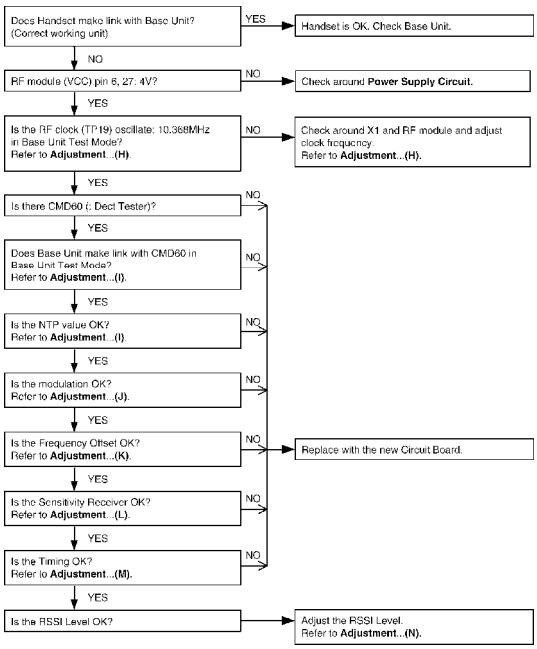
### 11.3.1. Base Unit


Does Base Unit make link with Handset? (Correct working unit)
YES
Base Unit is OK. Check Handset.
NO
RF module (VCC) pin 6, 27: 4V?
NO
Check around Power Supply Circuit.
YES
Is the RF clock (TP1) oscillate: 10.368MHz in Base Unit Test Mode? Refer to Adjustment...(E).
NO
Check around X1 and RF module and adjust clock frequency. Refer to Adjustment...(E).
YES
Is there CMD60 (: Dect Tester)?
NO
YES
Does Base Unit make link with CMD60 in Base Unit Test Mode? Refer to Adjustment...(H).
NO
YES
Is the NTP value OK? Refer to Adjustment...(H).
NO
YES
Is the modulation OK? Refer to Adjustment...(I).
NO
YES
Is the Frequency Offset OK? Refer to Adjustment...(J).
NO
Replace with the new Circuit Board.
YES
Is the Sensitivity Receiver OK? Refer to Adjustment...(K).
NO
YES
Is the Timing OK? Refer to Adjustment...(L).
NO
YES
Is the RSSI Level OK?
Adjust the RSSI Level. Refer to Adjustment...(M).

**Cross Reference:**

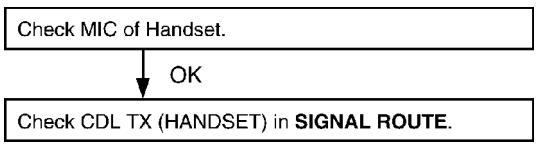
**Power Supply Circuit ()**
**Adjustment (Base Unit) ()**

### 11.3.2. Handset


Does Handset make link with Base Unit? (Correct working unit)
YES
Handset is OK. Check Base Unit.
NO
RF module (VCC) pin 6, 27: 4V?
NO
Check around Power Supply Circuit.
YES
Is the RF clock (TP19) oscillate: 10.368MHz in Base Unit Test Mode? Refer to Adjustment...(H).
NO
Check around X1 and RF module and adjust clock frequency. Refer to Adjustment...(H).
YES
Is there CMD60 (: Dect Tester)?
NO
YES
Does Base Unit make link with CMD60 in Base Unit Test Mode? Refer to Adjustment...(I).
NO
YES
Is the NTP value OK? Refer to Adjustment...(I).
NO
YES
Is the modulation OK? Refer to Adjustment...(J).
NO
YES
Is the Frequency Offset OK? Refer to Adjustment...(K).
NO
Replace with the new Circuit Board.
YES
Is the Sensitivity Receiver OK? Refer to Adjustment...(L).
NO
YES
Is the Timing OK? Refer to Adjustment...(M).
NO
YES
Is the RSSI Level OK?
Adjust the RSSI Level. Refer to Adjustment...(N).

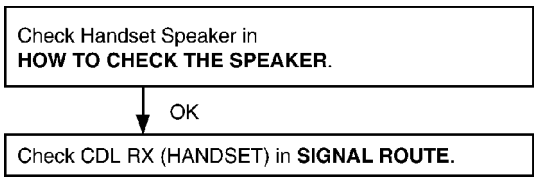
**Cross Reference**
**Power Supply Circuit ()**
**Adjustment (Handset) ()**

## 11.4. Check Handset Transmission




**Cross Reference:**
**SIGNAL ROUTE ()**

## 11.5. Check Handset Reception



**Cross Reference:**
**HOW TO CHECK THE HANDSET SPEAKER ().**
**SIGNAL ROUTE ()**

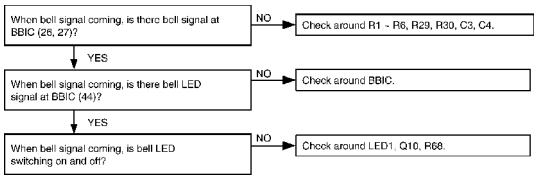
## 11.6. Check Caller ID

Check Caller ID in **SIGNAL ROUTE.**

**Cross Reference:**
**SIGNAL ROUTE ()**

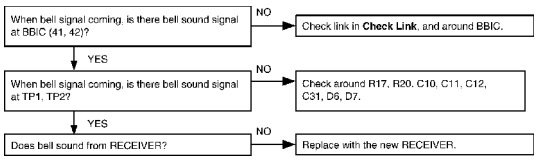
## 11.7. Bell Reception

### 11.7.1. Base Unit


When bell signal coming, is there bell signal at BBIC (26, 27)?
NO
Check around R1 ~ R6, R29, R30, C3, C4.
YES
When bell signal coming, is there bell LED signal at BBIC (44)?
NO
Check around BBIC.
YES
When bell signal coming, is bell LED switching on and off?
NO
Check around LED1, Q10, R68.

**Note:**
**BBIC is IC2.**

### 11.7.2. Handset


When bell signal coming, is there bell sound signal at BBIC (41, 42)?
NO
Check link in Check Link, and around BBIC.
YES
When bell signal coming, is there bell sound signal at TP1, TP2?
NO
Check around R17, R20, C10, C11, C12, C31, D5, D7.
YES
Does bell sound from RECEIVER?
NO
Replace with the new RECEIVER.

**Cross Reference:**
**Telephone Line Interface ()**
**Check Link ()**

**Note:**
**BBIC is IC1.**

# 12. CHECK PROCEDURE (BASE UNIT)

## 12.1. Preparation

### 12.1.1. Equipment Required

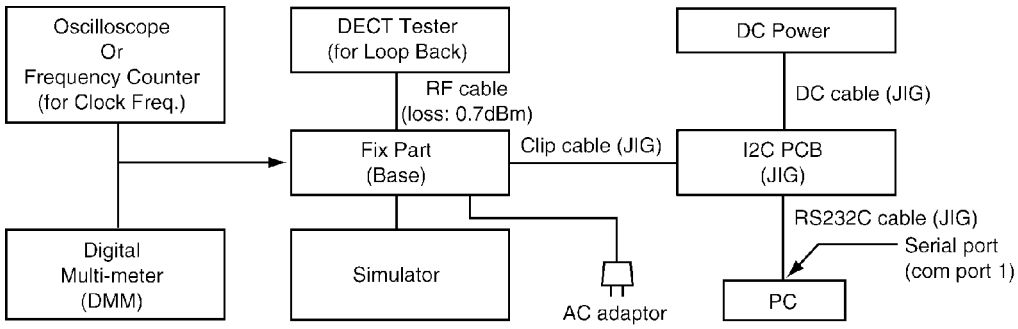
- DECT tester: Rohde & Schwarz, CMD 60 is recommended.
- Frequency counter: it must be precise to be able to measure 1Hz (precision; ±4ppm).
  Hewlett Packard, 53131A is recommended.
- DC power: it must be able to output at least 1A current under 9V.
- Digital multi-meter (DMM): it must be able to measure voltage and current.
- Oscilloscope

### 12.1.2. JIGs and PC

- EEPROM serial JIGs
  1. I2C PCB: PQZZTCD705BX
  2. RS232C cable: PQZZ1CD705BX
  3. Clip cable: PQZZ2CD705BX
  4. DC cable: PQZZ3CD705BX
- PC which runs in DOS mode
- Batch file for setting: PQZZTCD410NZ

## 12.2. PC Setting

### 12.2.1. Connections




### 12.2.2. PC Setting

1. Open a window of MS-DOS mode from the start-up menu.
2. Change a directory to the one with “RTX_COM” contained.
3. Type “SET_COM 1” from the keyboard (when COM port 1 is used for the connection).
4. Type “doskey”.

**Note:**
**See the table below for frequently used commands.**

| Command name | Function | Example |
|---|---|---|
| rdeeprom | Read the data of EEPROM | Type “rdeeprom 00 00 FF”, and the data from address “00 00” to “FF” is read out. |
| readid | Read ID (RFPI) | Type “readid”, and the registered ID is read out. |
| writeid | Write ID (RFPI) | Type “writeid 00 18 E0 0E 98”, and the ID “0018 E0 0E 98” is written. |
| setfreq | adjust Frequency of RFIC | Type “setfreq nn nn”. |
| hookoff | off-hook mode on Base | Type “hookoff”. |
| hookon | on-hook mode on Base | Type “hookon”. |
| Getchk | Read checksum | Type “getchk”. |
| Wreeprom | write eeprom | Type "wreeprom 01 23 45". "01 23" is address and "45" is data to be written. |
| InitBsPIN.bat | Initial Base PIN to "0000" | Type "initBsPIN" |

# 13. CHECK PROCEDURE (HANDSET)

## 13.1. Preparation

### 13.1.1. Equipment Required

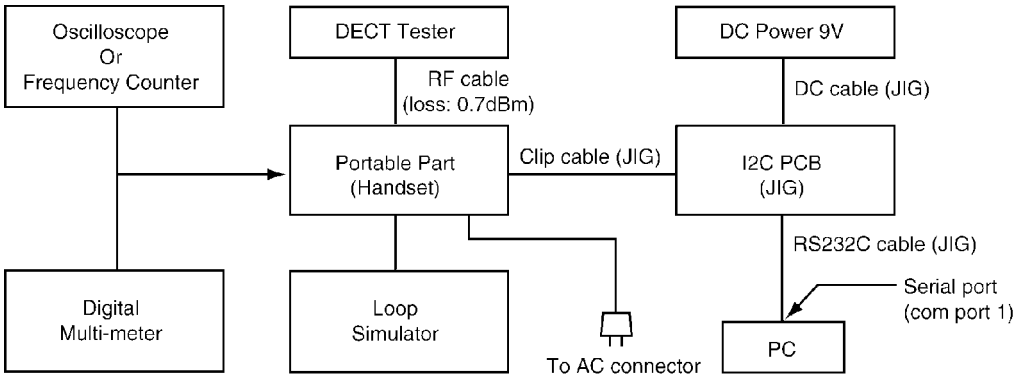
- DECT tester: Rohde & Schwarz, CMD 60 is recommended.
- Frequency counter: it must be precise to be able to measure 1Hz (precision;±4ppm).
  Hewlett Packard, 53131A is recommended.
- DC power: it must be able to output at least 1A current under 2.4V for Handset, 9V for JIG.
- Digital multi-meter (DMM): it must be able to measure voltage and current.
- Oscilloscope

### 13.1.2. JIGs and PC

- EEPROM serial JIGs
  1. I2C PCB: PQZZTCD705BX
  2. RS232C cable: PQZZ1CD705BX
  3. Clip cable: PQZZ2CD705BX
  4. DC cable: PQZZ3CD705BX
- PC which runs in DOS mode.
- Batch file for PC setting: PQZZTCD410NZ

## 13.2. PC Setting

### 13.2.1. Connections




### 13.2.2. PC Setting

1. **Open a window of MS-DOS mode from the start-up menu.**
2. **Change a directory to the one with “RTX_COM” contained.**
3. **Type “SET_COM 1” from the keyboard (when COM port 1 is used for the connection).**
4. **Type “doskey”.**

**Note:**
**See the table below for frequently used commands.**

| Command name | Function | Example |
|---|---|---|
| rdeeprom | Read the data of EEPROM | Type “rdeeprom 00 00 FF”, and the data from address “00 00” to “FF” is read out. |
| readid | Read ID (RFPI) | Type “readid”, and the registered ID is read out. |
| writeid | Write ID (RFPI) | Type “writeid 00 18 E0 0E 98”, and the ID “0018 E0 0E 98” is written. |
| setfreq | adjust Frequency of RFIC | Type “setfreq nn nn”. |
| Getchk | Read checksum | Type “getchk”. |
| Wreeprom | write eeprom | Type "wreeprom 01 23 45". "01 23" is address and "45" is data to be written. |

# 14. ADJUSTMENTS (BASE UNIT AND CHARGER UNIT)

**If your unit have below symptoms, adjust or confirm each item using remedy column from the table.**

| Symptom | Remedy |
|---|---|
| The base unit does not respond to a call from handset. | Make adjustments in item ( )~(M) |
| The base unit does not transmit or the transmit frequency is off. | Make adjustments in item ( (H)~(J), (L) |
| The transmit frequency is off. | Make confirmation in item (H)~(J), (L) |
| The transmit power output is low, and the operating distance between base unit and handset is less than normal. | Make confirmation in item |
| The reception sensitivity of base unit is low with noise. | Make confirmation in item |
| The transmit level is high or low. | Make adjustments in item ( |
| The reception level is high or low. | Make adjustments in item ( |
| The unit does not link. | Make confirmation in item |
| The unit cannot charge. | Make confirmation in item |

*** : Refer to Adjustment (Base Unit) ()**

## 14.1. Adjustment (Base Unit)

**Please follow the items below when BBIC or EEPROM are replaced.**

| | Items | Adjustment Point | Procedure* | |
|---|---|---|---|---|
| (A) | 2.65V Supply Confirmation | - | 1. Confirm that the voltage between TP187 and GND is 2.65V ± 0.2V. | IC<br>C2<br>C2<br>R<br>R<br>C<br>C3 |

<table>
<tr><th></th><th>Items</th><th>Adjustment Point</th><th>Procedure*</th></tr>
<tr><td>(B)</td><td>4.0V Supply Confirmation</td><td>-</td><td>1. Confirm that the voltage between TP91 and GND is 4.0V ± 0.2V.</td></tr>
<tr><td>(C)</td><td>VBACK Status Confirmation</td><td>-</td><td>1. Confirm that the voltage between J102 and GND is 0V ± 0.4V.</td></tr>
<tr><td>(D)*</td><td>BBIC Confirmation</td><td>-</td><td>1. BBIC Confirmation (Execute the command "getchk").<br>2. Confirm the returned checksum value.<br><br>Connection of checksum value and program number is shown below.<br><br>ex.)
<table>
<tr><th>checksum value</th><th>program number</th></tr>
<tr><td>9302</td><td>D231ZA</td></tr>
<tr><td>1F54</td><td>D231ZB</td></tr>
</table></td></tr>
<tr><td>(E)*</td><td>BBIC Clock Adjustment</td><td>TP1</td><td>1. Execute the command "deactmac".<br>2. Execute the command "conttx".<br>3. Input Command “rdeeprom 00 00 02”, then you can confirm the current value.<br>4. Adjust the frequency of TP1 executing the command "setfreq 00 xx (where xx is the value)" so that the reading of the frequency counter is 10.368000MHz ± 3Hz.</td></tr>
<tr><td>(F)*</td><td>Hookswitch Check with DC Characteristics</td><td>-</td><td>1. Connect J1 (Telephone Socket) to Tel-simulator which is connected with 600 Ω.<br>2. Set line voltage to 48V at on-hook condition and line current to 40mA at off-hook condition of nomal telephone.<br>3. Execute the command "hookoff"<br>4. Confirm that the line current is 40mA ± 5mA.<br>5. Execute the command "hookon".<br>6. Confirm that the line current is 0mA + 2mA.</td></tr>
</table>

| | Items | Adjustment Point | Procedure* | |
|---|---|---|---|---|
| (G)* | DTMF Generator Confirmation | - | 1. Connect J1 (Telephone Socket) to DTMF tester.<br>2. Execute the command "hookoff" and "dtmf_up".<br>3. Confirm that the high frequency (1477.06Hz) group is -8dBm ± 2dBm.<br>4. Execute the command "dtmf_lo".<br>5. Confirm that the low frequency (852.05Hz) group is -10dBm ± 2dBm. | IC<br>R2<br>C<br>R2<br>C<br>C<br>F<br>F |
| (H)* | Transmitted Power Confirmation | - | **Remove the Antenna before starting step from 1 to 4.**<br>1. Configure the DECT tester (CMD60) as follows;<br><Setting><br><br>-Test mode: FP<br>-Traffic Channel: 5<br>-Traffic Slot: 4<br>-Mode: Loopback<br>-PMID: 0000<br>2. Execute the command "testmode".<br>3. Initiate connection from DECT tester. (“set up connect”)<br>4. Confirm that the NTP value at ANT is 20dBm ~ 25dBm. | IC<br>C4<br>C6<br>C6<br>C<br>DA<br>C5<br>R7 |

| | Items | Adjustment Point | Procedure* | |
|---|---|---|---|---|
| (I) | Modulatoin Check and Adjustment | ANT | Follow steps 1 to 3 of (H) above.<br><br>4. Confirm that the B-Field Modulation is 340kHz/div ~ 402kHz/ div using data type Fig31.<br>5. Adjust the B-Field Modulation if required. (Execute the command "readmod" and "wrtmod xx", where xx is the value.) | I<br>C<br>C<br>C<br>D<br>C<br>R |
| (J) | Frequency Offset Confirmation | - | Follow steps 1 to 3 of (H) above.<br><br>4. Confirm that the frequency offset is -50kHz ~ +50kHz. | I<br>C<br>C<br>C<br>D<br>C<br>R |

| | Items | Adjustment Point | Procedure* | |
|---|---|---|---|---|
| (K) | Sensitivity Receiver Confirmation | - | Follow steps 1 to 3 of (H) above.<br><br>4. Set DECT tester power to -88dBm.<br>5. Confirm that the BER is < 1000ppm. | I<br>C<br>C<br>C<br>C<br>D<br>C<br>R |
| (L) | Timing Confirmation | - | Follow steps 1 to 3 of (H) above.<br><br>4. Confirm that the Timing accuracy is < ± 5.0ppm. | I<br>C<br>C<br>C<br>C<br>D<br>C<br>R |

| | Items | Adjustment Point | Procedure* | |
|---|---|---|---|---|
| (M)* | RSSI Level Confirmation | - | Follow steps 1 to 3 of (H) above.<br><br>4. Set DECT tester power to -88dBm.<br>5. Execute the command "readrssi".<br>6. Confirm: 29 < returned value < 3E (hex) | I<br>C<br>C<br>C<br>D<br>C<br>R |

| | Items | Adjustment Point | Procedure* |
|---|---|---|---|
| (N)* | Receive Audio Check and Adjustment | ANT J1 | 1. Configure the DECT tester (CMD60) as follows;<br><Setting><br><br>-Test mode: FP<br>-Mode: Normal<br>-PMID: 0000<br>2. Execute the command "testmode".<br>3. Initiate connection from DECT tester.<br>4. Execute the command "hookoff".<br>5. Execute the command "openau".<br>6. Connect J1 (Telephone Socket) to Tel-simulator which is connected with 600 Ω.<br>7. Set line voltage to 48V and line current to 40mA.<br>8. Connect DECT tester to Tel-simulator.<br>9. Input audio signal (200mVrms/1kHz tone) to Tel-simulator.<br><DECT tester setting><br><br>-Scramble: On<br>-AF Gen to ADPCM: Off<br>-AF Meter Input: ADPCM<br>-AF Gen Frequency: 1000Hz<br>-AF Gen Level: 200mVrms<br>10. Confirm hearing tone: 410mVrms ± 70mVrms<br>11. Adjust audio level if required. (Make sure current value using "getmicgain". And then execute the command "setmicgain xx", where xx is the value.)<br>12. Confirm that the B-field audio distortion with DECT tester is < 5 %. |

| | Items | Adjustment Point | Procedure* |
|---|---|---|---|
| (O) * | Transmit Audio Check and Adjustment | ANT J1 | 1. Configure the DECT tester (CMD60) as follows;<br><Setting><br><br>-Test mode: FP<br>-Mode: Normal<br>-PMID: 0000<br>2. Execute the command "testmode".<br>3. Initiate connection from DECT tester.<br>4. Execute the command "hookoff".<br>5. Execute the command "openau".<br>6. Connect J1 (Telephone Socket) to Tel-simulator which is connected with 600 Ω.<br>7. Set line voltage to 48V and line current to 40mA.<br>8. Input audio signal (30mVrms/1kHz tone) to DECT tester.<br><DECT tester setting><br><br>-Scramble: On<br>-AF Gen to ADPCM: On<br>-AF Meter Input: AF Voltm<br>-AF Gen Frequency: 1000Hz<br>-AF Gen Level: 30mVrms<br>9. Confirm hearing tone: 880mVrms ± 150mVrms.<br>10. Adjust audio level if required. (Make sure current value using "getspkrgain". And then execute the command "setspkrgain xx", where xx is the value.)<br>11. Confirm that the audio distortion at 600R of Tel-simulator is < 5 %. |
| (P) | Charging Check | - | 1. Connect Charge Contact 12 Ω /2W register between charge+ and charge-.<br>2. Measure and confirm voltage across the regigster is 2.3V ± 0.2V. |

**Note:**
**After the measuring, sock up the solder of TP.**
*** : PC Setting () is required beforehand.**
**The connection of adjustment equipment are as shown in Adjustment Standard (Base Unit) ().**

## 14.2. Adjustment Standard (Base Unit)

**When connecting the Simulator Equipments for checking, please refer to below.**

### 14.2.1. Component View

**Note:**
**(H) - (O) is refered to ADJUSTMENTS (BASE UNIT AND CHARGER UNIT) ()**

### 14.2.2. Flow Solder Side View

**Note:**
**(A) - (P) is refered to ADJUSTMENTS (BASE UNIT AND CHARGER UNIT) ()**

## 14.3. Adjustment (Charger Unit)

| | Items | Adjustment Point | Procedure |
|---|---|---|---|
| (A) | Charging Check | - | 1. Connect Charge Contact 12 Ω /2W register between charge+ and charge-.<br>2. Measure and confirm voltage across the regigster is 2.7V ± 0.2V. |

**Note:**
**After the measuring, sock up the solder of TP.**
**The connection of adjustment equipment are as shown in Adjustment Standard (Charger Unit) ().**

## 14.4. Adjustment Standard (Charger Unit)

**When connecting the Simulator Equipments for checking, please refer to below.**

### 14.4.1. Flow Solder Side View

**Note:**
**(A) is refered to ADJUSTMENTS (BASE UNIT AND CHARGER UNIT) ()**

# 15. ADJUSTMENTS (HANDSET)

**If your unit have below symptoms, adjust or confirm each item using remedy column from the table.**

| Symptom | Remedy |
|---|---|
| The movement of Battery Low indicator is wrong. | Make confirmation in item (F)~(G) |
| The handset does not respond to a call from base unit. | Make adjustments in item ( (H), (J)~(N) |
| The handset does not transmit or the transmit frequency is off. | Make adjustments in item ( (H)~(K), (M) |
| The transmit frequency is off. | Make confirmation in item (H)~(K), (M) |
| The transmit power output is low, and the operating distance between base unit and handset is less than normal. | Make confirmation in item |
| The reception sensitivity of base unit is low with noise. | Make confirmation in item |
| Does not link between base unit and handset. | Make confirmation in item (H)~(N) |
| The reception level is high or low. | Make adjustments in item ( |
| The transmit level is high or low. | Make adjustments in item ( |

*** : Refer to Adjustment (Handset) ()**

## 15.1. Adjustment (Handset)

**Please follow the items below when BBIC or EEPROM are replaced.**

| | Items | Adjustment Point | Procedure* | |
|---|---|---|---|---|
| (A) | 4.0V Supply Confirmation | - | 1. Confirm that the consumption current is < 200mA , that is, there is no short circuit.<br>2. Confirm that the voltage between TP14 and GND is 4.1V ± 0.2V. | I<br>F<br>D<br>C<br>F<br>C |

<table>
<tr><th></th><th>Items</th><th>Adjustment Point</th><th>Procedure*</th><th></th></tr>
<tr><td>(B)</td><td>VBACK Status Confirmation</td><td>-</td><td>1. Confirm that the voltage between TP18 and GND is 0V ± 0.4V.</td><td>I<br>F<br>D<br>C<br>F<br>C</td></tr>
<tr><td>(C)</td><td>BBIC Confirmation</td><td>-</td><td>1. BBIC Confirmation (Execute the command "getchk").<br>2. Confirm the returned checksum value.<br><br>Connection of checksum value and program number is shown below.<br>ex.)<table><tr><th>checksum value</th><th>program number</th></tr><tr><td>D8C3</td><td>D241ZB</td></tr><tr><td>A00E</td><td>D241ZC</td></tr><tr><td>AA80</td><td>D241ZD</td></tr><tr><td>03DA</td><td>D241ZG</td></tr></table></td><td>I</td></tr>
<tr><td>(D)</td><td>Charge Control Check & Charge Current Monitor Confirmation</td><td>-</td><td>1. Apply 6V between TP5(+) and TP6(-) with current limit of PSU to 200mA.<br>2. Confirm that the charge current is ON/OFF.<br>3. SW to decrease current limit of PSU to 100mA.<br>4. Confirm that the charge current is stable.</td><td>I<br>L<br>F<br>C</td></tr>
<tr><td>(E)*</td><td>Charge Detection (OFF) Confirmation</td><td>-</td><td>1. Stop supplying 6V to TP5(+) and TP6(-).<br>2. Execute the command "charge".<br>3. Confirm that the returned value is 0x00 (hex).</td><td>I<br>L<br>F<br>C</td></tr>
<tr><td>(F)*</td><td>Battery Monitor Confirmation & Adjustment</td><td>-</td><td>1. Apply 2.3V ± 0.005V between TP3(+) and TP4(-).<br>2. Execute the command "readbatt".<br>3. Confirm:<br>98 < returned value < A8 (Hex)<br>4. Execute the command "WRTBAT2 XX".<br>XX: (returned value) - 06 (Hex)</td><td>I<br>L<br>F<br>C</td></tr>
</table>

| | Items | Adjustment Point | Procedure* | |
|---|---|---|---|---|
| (G) | Battery low Confirmation | - | 1. Apply 2.40V between TP3(+) and TP4(-).<br>2. Confirm that there is no Speaker sound (Battery low alarm).<br>3. Apply 2.20V between TP3(+) and TP4(-).<br>4. Confirm that there is Speaker sound (Battery low alarm). | IC<br>R<br>C3<br>C |
| (H)* | BBIC Clock Adjusment | TP19 | 1. Execute the command "deactmac".<br>2. Execute the command "conttx".<br>3. Input Command “rdeeprom 00 00 02”, then you can confirm the current value.<br>4. Adjust the frequency of TP19 executing thecommand "setfreq 00 xx (where xx is the value)" so that the reading of the frequency counter is 10.368000MHz ± 3Hz. | IC<br>IC |
| (I)* | Transmitted Power Confirmation | TP15 | **Remove the Antenna before starting step from 1 to 5.**<br>1. Configure the DECT tester(CMD60) as follows;<br><Setting><br><br>-Test mode: PP<br>-RFPI: 0102030405<br>-Traffic Channel: 5<br>-Traffic Slot: 4<br>-Mode: Loopback<br>2. Execute the command "testmode".<br>3. Execute the command "regcmd60"<br>4. Initiate connection from DECT tester.<br>5. Confirm that the NTP value at A201 (TP15) is 20dBm ~ 25dBm | IC<br>C<br>C5<br>C6<br>C6 |
| (J) | Modulatoin Check and Adjusment | TP15 | **Follow steps 1 to 4 of (I) above.**<br><br>**5. Confirm that the B-Field Modulation is 340kHz/div ~ 402kHz/ div using data type Fig31.**<br>**6. Adjust the B-Field Modulation if required. (Execute the command "Readmod" and "Writemod xx", where xx is the value.)** | IC<br>C<br>C5<br>C6<br>C6 |

| | Items | Adjustment Point | Procedure* | |
|---|---|---|---|---|
| (K) | Frequency Offset Confirmation | - | Follow steps 1 to 4 of (I) above.<br><br>5. Confirm that the frequency offset is -50kHz ~ +50kHz. | IC<br>C<br>C5<br>C6<br>C6 |
| (L) | Sensitivity Receiver Confirmation | - | Follow steps 1 to 4 of (I) above.<br><br>5. Set DECT tester power to -88dBm.<br>6. Confirm that the BER is < 1000ppm. | IC<br>C<br>C5<br>C6<br>C6 |
| (M) | Timing Confirmation | - | Follow steps 1 to 4 of (I) above.<br><br>5. Confirm that the Timing accuracy is < ± 10ppm. | IC<br>C<br>C5<br>C6<br>C6 |

| | Items | Adjustment Point | Procedure* |
|---|---|---|---|
| (N) * | RSSI Level Confirmation | - | Follow steps 1 to 4 of (I) above.<br><br>5. Set DECT tester power to -88dBm.<br>6. Execute the command "readrssi"<br>7. Confirm that the returned value is 0x34 ± A (hex). |
| (O) * | Receive Audio Check and Confirmation | TP15 | 1. Configure the DECT tester (CMD60) as follows;<br><Setting><br><br>-Test mode: PP<br>-Mode: Nomal<br>-RFPI: 0102030405<br>2. Execute the command "testmode".<br>3. Execute the command "regcmd60"<br>4. Initiate connection from DECT tester.<br>5. Execute the command "openaudio".<br>6. Confirm that the value of EEPROM address "F3F" is "02". (If the value is not "02 (by User)", set "02" and power off and power on, and return to clause 2.)<br>7. Input audio signal (50mVrms/1kHz tone) from DECT tester.<br><DECT tester setting><br><br>-Scramble: On<br>-AF Gen to ADPCM: On<br>-AF Meter Input: AF Voltm<br>-AF Gen Frequency: 1000Hz<br>-AF Gen Level: 50mVrms<br>8. Confirm hearing tone: 300mV ± 250mV (Just check Audio path)<br>9. Confirm that the audio distortion with DECT tester is < 5 %. |
| (P) | Transmit Audio Check and Confirmation | TP15 | 1. Configure the DECT tester (CMD60) as follows;<br><Setting><br><br>-Test mode: FP<br>-Mode: Normal<br>-RFPI: 0102030405<br>2. Execute the command "testmode".<br>3. Execute the command "regcmd60".<br>4. Initiate connection from DECT tester.<br>5. Execute the command "openaudio".<br>6. Confirm that the value of EEPROM address "F3F" is "02". (If the value is not "02 (by User)", set "02" and power off and power on, and return to clause 2.)<br>7. Input audio signal (30mVrms/1kHz tone) to DECT tester.<br><DECT tester setting><br><br>-Scramble: On<br>-AF Gen to ADPCM: Off<br>-AF Meter Input: ADPCM<br>-AF Gen Frequency: 1000Hz<br>-AF Gen Level: 30mVrms<br>8. Confirm hearing tone: 300mV ± 250mV (Just check Audio path)<br>9. Confirm that the audio distortion with DECT tester is < 5 %. |

**Note:**
**After the measuring, sock up the solder of TP.**
*** : PC Setting () is required beforehand.**
**The connection of adjustment equipment are as shown in Adjustment Standard (Handset) ().**

## 15.2. Adjustment Standard (Handset)

**When connecting the Simulator Equipments for checking, please refer to below.**

**Note:**
**(A) - (P) is refered to ADJUSTMENTS (HANDSET) ()**

# 16. RF SPECIFICATION

## 16.1. Base Unit

| Item | Value | Refer to -. * | Remarl |
|---|---|---|---|
| TX Power | More than 20 dBm ~ 25 dBm | Adjustment (Base Unit) (H) | |
| Modulation | 340 kHz/div ~ 402 kHz/div | Adjustment (Base Unit) (I) | Data type: I |
| Frequency Offset | -40 kHz ~ +40 kHz | Adjustment (Base Unit) (J) | |
| RX Sensitivity | < 1000 ppm | Adjustment (Base Unit) (K) | |
| Timing Accuracy | < ± 5.0 ppm | Adjustment (Base Unit) (L) | |
| RSSI Level | 0x34 hex ± A hex | Adjustment (Base Unit) (M) | |

*** : Refer to Adjustment (Base Unit) ()**

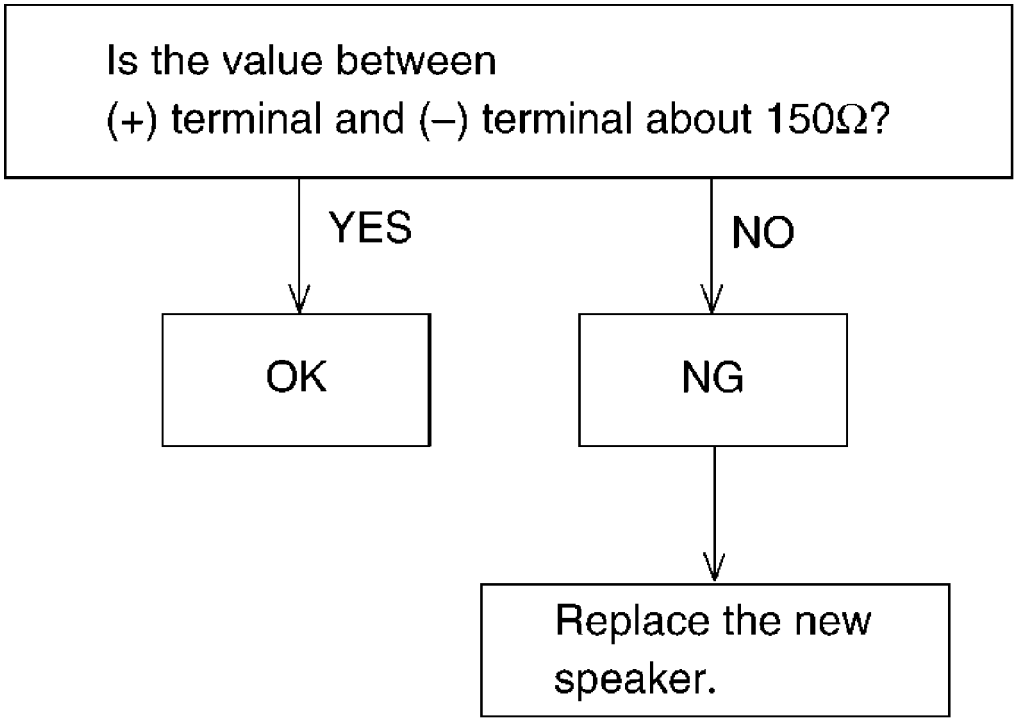
## 16.2. Handset

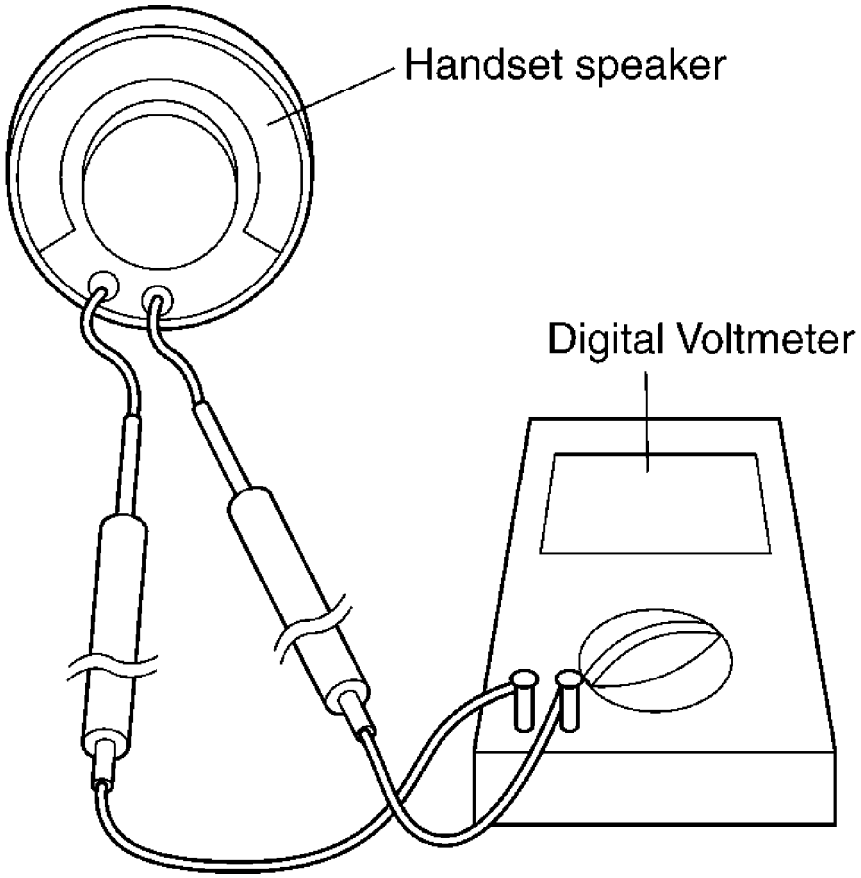
| Item | Value | Refer to -. ** | Remarl |
|---|---|---|---|
| TX Power | More than 20 dBm ~ 25 dBm | Adjustment (Handset) (I) | |
| Modulation | 340 kHz/div ~ 402 kHz/div | Adjustment (Handset) (J) | Data type: I |
| Frequency Offset | -40 kHz ~ +40 kHz | Adjustment (Handset) (K) | |
| RX Sensitivity | < 1000 ppm | Adjustment (Handset) (L) | |
| Timing Accuracy | < ± 10 ppm | Adjustment (Handset) (M) | |
| RSSI Level | 0x34 hex ± A hex | Adjustment (Handset) (N) | |

**** : Refer to Adjustment (Handset) ()**

# 17. HOW TO CHECK THE HANDSET SPEAKER

1. **Prepare the digital voltmeter, and set the selector knob to ohm meter.**
2. **Put the probes at the speaker terminals as shown below.**




## 18. FREQUENCY TABLE (MHz)

| | BASE UNIT | | HANDSET | |
|---|---|---|---|---|
| Channel No | Transmit Frequency | Receive Frequency | Transmit Frequency | Receive Fr |
| 1 | 1897.344 | 1897.344 | 1897.344 | 1897.3 |
| 2 | 1895.616 | 1895.616 | 1895.616 | 1895.6 |
| 3 | 1893.888 | 1893.888 | 1893.888 | 1893.8 |
| 4 | 1892.160 | 1892.160 | 1892.160 | 1892.1 |
| 5 | 1890.432 | 1890.432 | 1890.432 | 1890.4 |
| 6 | 1888.704 | 1888.704 | 1888.704 | 1888.7 |
| 7 | 1886.976 | 1886.976 | 1886.976 | 1886.9 |
| 8 | 1885.248 | 1885.248 | 1885.248 | 1885.2 |
| 9 | 1883.520 | 1883.520 | 1883.520 | 1883.5 |
| 10 | 1881.792 | 1881.792 | 1881.792 | 1881.7 |

**Note:**
**Channel No. 10: In the Test Mode on Base Unit and Handset.**

# 19. BLOCK DIAGRAM (BASE UNIT)

# 20. CIRCUIT OPERATION (BASE UNIT)

## 20.1. Outline

**Base Unit consists of the following ICs as shown in BLOCK DIAGRAM (BASE UNIT) ().**

- DECT BBIC (Base Band IC): IC2
- Handling all the audio, signal and data processing needed in a DECT base unit
- Controlling the DECT specific physical layer and radio section (Burst Module Controller section)
- ADPCM codec filter for speech encoding and speech decoding (DSP section)
- Echo-cancellation and Echo-suppression (DSP section)
- Any tones (tone, sidetone, ringing tone, etc.) generation (DSP section)
- DTMF receiver (DSP section)
- Clock Generation for RF Module
- ADC, DAC, timer, and power control circuitry
- All interfaces (ex: RF module, EEPROM, LED, Analog Front End, etc.)
- RF Module: IC3
- PLL Oscillator

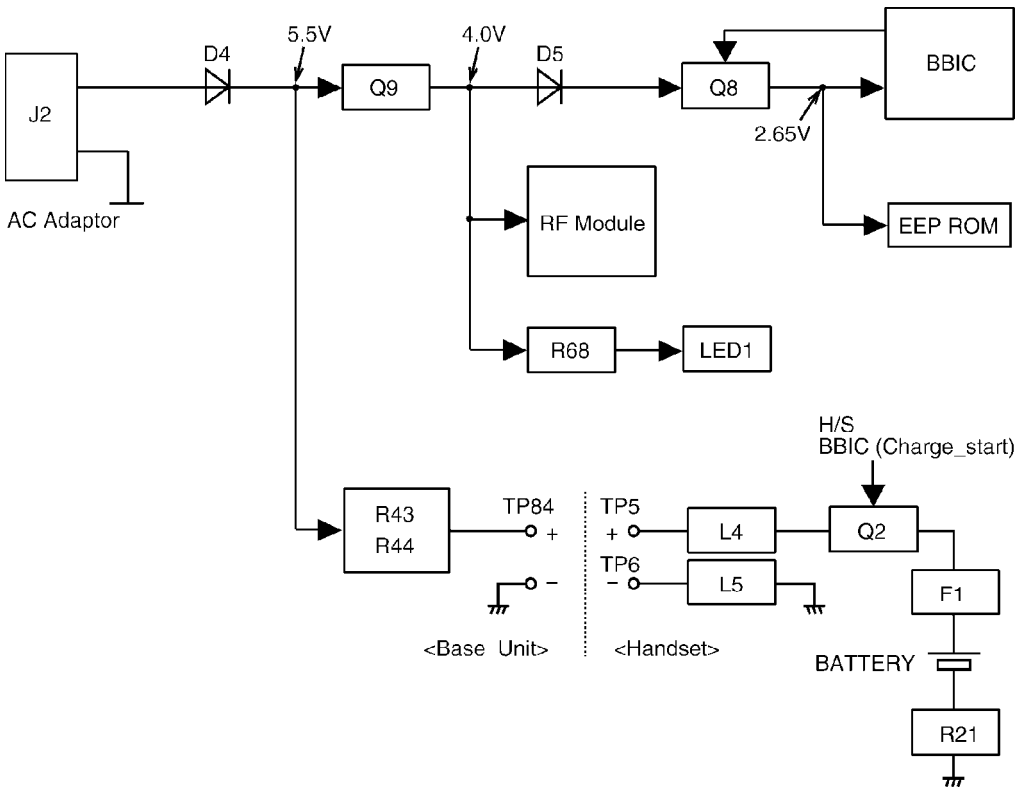
- Detector
- Compress/Expander
- First/Second Mixer
- Amplifier for transmission and reception
- EEPROM: IC1
- Temporary operating parameters (for RF, etc.)
- Additionally,
- Power Supply Circuit (+4.0V, +2.65V output)
- Crystal Circuit (10.368MHz)
- Charge Circuit
- Telephone Line Interface Circuit

## 20.2. Power Supply Circuit

**The power is supplied to the DECT BBIC, RF Module, EEPROM, Relay Coil, LED and Charge Contact from AC Adaptor (+6V) as shown in Fig.101. The power supply is as follows;**

- DECT BBIC (IC2): J2(+6V) → D4 → Q9 → D5 → Q8 → IC2
- RF Module (IC3): J2(+6V) → D4 → Q9 → IC3
- EEPROM (IC1): J2(+6V) → D4 → Q9 → D5 → Q8 → IC2 → IC1
- LED (LED1): J2(+6V) → D4 → Q9 → R68 → LED1
- Charge Contact (TP84): J2(+6V) → D4 → R43, R44 → TP84

**<Fig.101>**




## 20.3. Telephone Line Interface

**<Function>**

**- Bell signal detection**
**- Clip signal detection**
**- ON/OFF hook circuit**
**- Audio circuits**

**Bell & Clip (: Calling Line Identification Presentation: Caller ID) signal detection:**
**In the standby mode, Q2 is open to cut the DC loop current and decrease the ring load.**
**When ring voltage appears at the TP3 (A) and TP40 (B) leads (when the telephone rings), the signal is transferred as follows;**

**- A → C4 → R2 → R29 → IC2 (DLP) [BELL & CLIP]**
**- B → C3 → R1 → R30 → IC2 (DLP) [BELL & CLIP]**

**ON/OFF hook circuit:**
**In the standby mode, Q2 is open, and connected as to cut the DC loop current and to cut the voice signal. The unit is consequently in an off-hook condition.**
**When IC2 detects a ring signal or press the TALK Key onto the handset, Q3 turns on and then Q2 turns on, thus providing an off-hook condition (active DC current flow through the circuit) and the following signal flow is for the loop current.**

**- A → R77 → D2 → Q2 → R8 → Q3 → D2 → B [OFF HOOK]**

## 20.4. Transmitter/Receiver

**Base Unit and Handset mainly consist of RF Module and DECT BBIC.**
**Base Unit and Handset transmit/receive voice signal and data signal through the antenna on carrier frequency.**

**Signal Pass:**
***Refer to SIGNAL ROUTE ().**

### 20.4.1. Transmitter Block

**The voice signal input from the TEL LINE interface goes to RF Module (IC3) through DECT BBIC (IC2) as shown in BLOCK DIAGRAM (BASE UNIT) ()**
**The voice signal passes through the analog part of IC2 where it is amplified and converted to a digital audio stream signal. The burst switch controller processes this stream performing encryption and scrambling, adding the various other fields to produce the GAP (Generic Access P rofile) standard DECT frame, assigning to a time slot and channel etc.**
**In IC3, the carrier frequency is changing, and frequency modulated RF signal is generated and amplified, and radiated from antenna. Handset detects the voice signal or data signal in the circuit same as the following explanation of Receiver Block.**

### 20.4.2. Receiver Block

**The signal of 19.2 MHz band (18.81792 MHz ~ 18.97344 MHz) which is input from antenna is input to IC3 as shown in BLOCK DIAGRAM (BASE UNIT) ().**
**In IC3, the signal of 19.2 MHz band is downconverted to 864 kHz signal and demoduleted, and goes to IC2 as GAP (Generic Access Profile) standard DECT frames. It passes through the decoding section burst switch controller where it separates out the frame information and performs de-encryption and de-scrambling as required. It then goes to the DSP section where it is turned back into analog audio. This is amplified by the analog front end, and goes to the TEL LINE Interface.**

# 21. BLOCK DIAGRAM (HANDSET)

# 22. CIRCUIT OPERATION (HANDSET)

## 22.1. Outline

**Handset consists of the following ICs as shown in BLOCK DIAGRAM (HANDSET) ().**

**- DECT BBIC (Base Band IC): IC1**
**- All data signals (forming/analyzing ACK or CMD signal)**
**- All interfaces (ex: Key, Detector Circuit, Charge, DC/DC Converter,**

EEPROM, LCD)
- RF Module: IC3
- PLL Oscillator
- Detector
- Compress/Expander
- Amplifier for transmission and reception

## 22.2. Power Supply Circuit/Reset Circuit

**Circuit Operation:**
**When power on the Handset, the voltage is as follows;**
**BATTERY(2.2 V ~ 2.6V: TP3) → TP14(4V) → IC3(6, 27), D3 → IC1(37) → IC1(39, 63) (2.65V)**
**The Reset signal generates R19, C23 and 2.65V.**

## 22.3. Charge Circuit

**Circuit Operation:**
- **When charging the handset on the Base Unit, the charge current is as follows;**
  **DC+(5.5V ~ 6V) → D4 → R43, R44 → CHARGE+(Base) → CHARGE+ (Handset) → L4 → Q2 → F1 → BATTERY+ ... Battery ... BATTERY- → R21 → GND → L5 → CHARGE-(Handset) → CHARGE-(Base) → GND → DC-(GND)**
- **When charging the handset on the Charger Unit, the charge current is as follows;**
  **DC+(5.5V ~ 6V) → D1 → R1, R2 → CHARGE+(Charger Unit) → CHARGE+(Handset) → F1 → BATTERY+ ... Battery ... BATTERY- → R21 → GND → CHARGE-(Handset) → CHARGE-(Charger Unit) → GND → DC-(GND)**

**In this way, the BBIC on Handset detects the fact that the battery is charged.**
**The charge current is controlled by switching Q2 of Handset.**
**Refer to Fig.101 in Power Supply Circuit ().**

## 22.4. Battery Low/Power Down Detector

**Circuit Operation:**
**"Battery Low" and "Power Down" are detected by BBIC which check the voltage from battery.**
**The detected voltage is as follows;**
- **Battery Low**

**Battery voltage: V(Batt) < 2.3V**

**The BBIC detects this level and " " starts flashing and "battery alarm" starts ringing.**

**- Power Down**

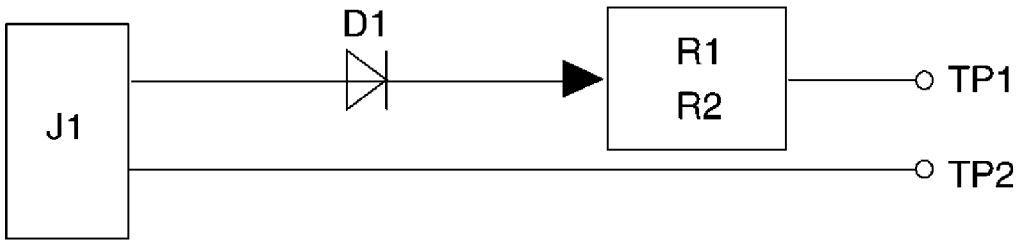
**Battery voltage: V(Batt) < 2.2V**

**The BBIC detects this level and power down.**

# 23. CIRCUIT OPERATION (CHARGER UNIT)

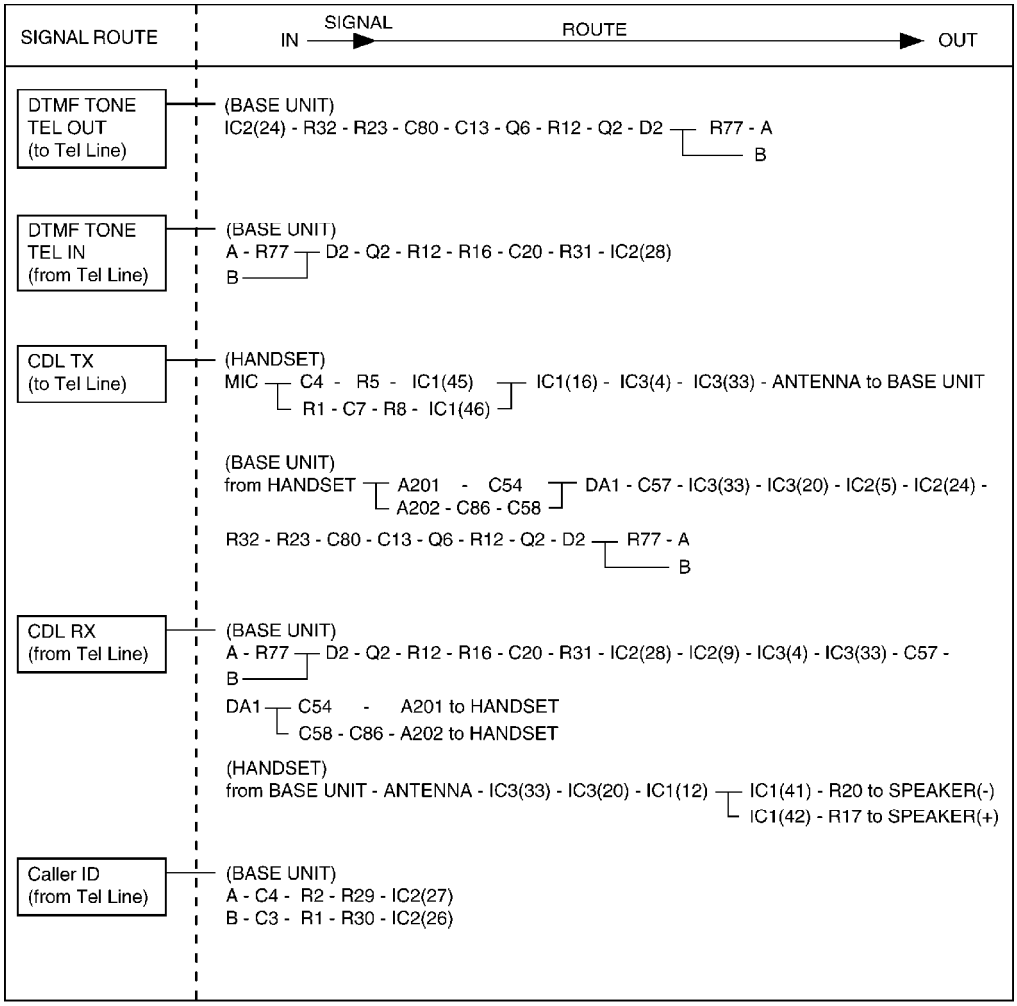
## 23.1. Power Supply Circuit

**The power supply is as shown.**




AC Adaptor

# 24. SIGNAL ROUTE


SIGNAL ROUTE
IN
SIGNAL
ROUTE
OUT
DTMF TONE
TEL OUT
(to Tel Line)
(BASE UNIT)
IC2(24) - R32 - R23 - C80 - C13 - Q6 - R12 - Q2 - D2 - R77 - A
B
DTMF TONE
TEL IN
(from Tel Line)
(BASE UNIT)
A - R77 - D2 - Q2 - R12 - R16 - C20 - R31 - IC2(28)
B
CDL TX
(to Tel Line)
(HANDSET)
MIC - C4 - R5 - IC1(45) - IC1(16) - IC3(4) - IC3(33) - ANTENNA to BASE UNIT
R1 - C7 - R8 - IC1(46)
(BASE UNIT)
from HANDSET - A201 - C54 - DA1 - C57 - IC3(33) - IC3(20) - IC2(5) - IC2(24) -
A202 - C86 - C58
R32 - R23 - C80 - C13 - Q6 - R12 - Q2 - D2 - R77 - A
B
CDL RX
(from Tel Line)
(BASE UNIT)
A - R77 - D2 - Q2 - R12 - R16 - C20 - R31 - IC2(28) - IC2(9) - IC3(4) - IC3(33) - C57 -
B
DA1 - C54 - A201 to HANDSET
C58 - C86 - A202 to HANDSET
(HANDSET)
from BASE UNIT - ANTENNA - IC3(33) - IC3(20) - IC1(12) - IC1(41) - R20 to SPEAKER(-)
IC1(42) - R17 to SPEAKER(+)
Caller ID
(from Tel Line)
(BASE UNIT)
A - C4 - R2 - R29 - IC2(27)
B - C3 - R1 - R30 - IC2(26)

# 25. CPU DATA (BASE UNIT)

## 25.1. IC2 (BBIC)

| Pin | Description | I/O | Hi | Hi-z | Low | Remarks |
|---|---|---|---|---|---|---|
| 1 | VDD | - | - | - | - | - |
| 2 | VSS | - | - | - | - | - |
| 3 | PA_Driver_Amp | D.O | PA_ON | - | PA_OFF | - |
| 4 | TX/RX SW | D.O | TX | - | RX | - |
| 5 | RX_Data | D.I | Data | - | Data | - |
| 6 | PLL_Strobe | D.O | Latch | - | Normal | - |
| 7 | PLL_Data | D.O | Active | - | Active | - |
| 8 | PLL_Clk | D.O | Active | - | Active | - |
| 9 | TX_Data | D.O | Active | - | Active | - |
| 10 | (NO USE) | D.O | - | - | - | - |
| 11 | RF_System_Clk | D.O | Active | - | Active | - |
| 12 | VDD | - | - | - | - | - |
| 13 | VSS | - | - | - | - | - |
| 14 | RESETQ | A.I | Normal | - | Reset | - |
| 15 | VDDPM | D.O | - | - | - | - |
| 16 | VSSO | D.I | - | - | - | - |
| 17 | LOAD | A.I | - | - | - | - |
| 18 | XTAL | A.I | - | - | - | 10.368 MHz |
| 19 | VDDLR | A.I | - | - | - | - |
| 20 | LRB | A.I | - | - | - | - |
| 21 | VDDA | - | - | - | - | - |
| 22 | VSSA | - | - | - | - | - |
| 23 | Audio_Out_N | A.O | - | - | - | - |
| 24 | Audio_Out_P | A.O | - | - | - | - |
| 25 | Bandgap_Ref | A.I | - | - | - | - |
| 26 | Differential_Line_P | A.I | - | - | - | for Bell Clip |
| 27 | Differential_Line_N | A.I | - | - | - | for Bell Clip |
| 28 | Audio_In_N | A.I | - | - | - | - |
| 29 | ADC_Ref | A.I | - | - | - | - |
| 30 | RSSI | A.I | - | - | - | - |
| 31 | AD2(MPCINP) | A.I | - | - | - | for Polarity |
| 32 | AD3 | A.I | - | - | - | for Polarity |
| 33 | (NO USE) | D.I | (I_PU) | - | - | - |
| 34 | (NO USE) | D.I | (I_PU) | - | - | - |
| 35 | (NO USE) | D.I | (I_PU) | - | - | - |
| 36 | (NO USE) | D.I | (I_PU) | - | - | - |
| 37 | VDD | - | - | - | - | - |
| 38 | VSS | - | - | - | - | - |
| 39 | Supply_EEP | D.O | (Fixed) | - | - | - |
| 40 | Serial_Data(I2C) | D.I/O | Data | - | Data | - |
| 41 | Serial_Clk(I2C) | D.O | Active | - | Active | - |
| 42 | MODE | D.I | - | - | (Fixed) | - |
| 43 | (NO USE) | D.O | - | - | (Fixed) | - |
| 44 | BELL/ PAGING_LED | D.O | LED_ON | - | LED_OFF | - |

| Pin | Description | I/O | Hi | Hi-z | Low | Remarks |
|---|---|---|---|---|---|---|
| 45 | VBACK | A.I | - | - | - | - |
| 46 | (NO USE) | - | - | - | (I_PD) | - |
| 47 | (NO USE) | D.I | - | - | (Fixed) | - |
| 48 | VDD | - | - | - | - | - |
| 49 | (NO USE) | D.I | - | - | (Fixed) | - |
| 50 | (NO USE) | D.I | (Fixed) | - | - | - |
| 51 | (NO USE) | D.I | - | - | (Fixed) | - |
| 52 | (NO USE) | D.I | - | - | (Fixed) | - |
| 53 | VSS | - | - | - | - | - |
| 54 | VDD | - | - | - | - | - |
| 55 | KEY_IN | D.I | No Key | - | Key | - |
| 56 | (NO USE) | D.I/O | - | - | (I_PD) | - |
| 57 | (NO USE) | D.I/O | - | - | (I_PD) | - |
| 58 | (NO USE) | D.I/O | - | - | (I_PD) | - |
| 59 | (NO USE) | D.I/O | - | - | (I_PD) | - |
| 60 | (NO USE) | D.I/O | - | - | (I_PD) | - |
| 61 | HOOK_CTRL | D.O | Make | - | Break | - |
| 62 | (NO USE) | D.I/O | - | - | (I_PD) | - |
| 63 | ANT1 | D.O | ANT1_ON | - | ANT1_OFF | - |
| 64 | ANT2 | D.O | ANT2_ON | - | ANT2_OFF | - |

**Note:**
**I_PU; Internal Pull-Up, I_PD; Internal Pull-Down**

# 26. CPU DATA (HANDSET)

## 26.1. IC1 (BBIC)

| Pin | Description | I/O | Hi | Hi-z | Remarks |
|---|---|---|---|---|---|
| 1 | LCD_SEGMENT | D.O | Active | - | - |
| 2 | LCD_COMMON | D.O | Active | - | - |
| 3 | VDD | - | - | - | - |
| 4 | VSS | - | - | - | - |
| 5 | LCD_COMMON | D.O | Active | - | - |
| 6 | LCD_COMMON | D.O | Active | - | - |
| 7 | LCD_COMMON | D.O | Active | - | - |
| 8 | LCD_COMMON | D.O | Active | - | - |
| 9 | LCD_COMMON | D.O | Active | - | - |
| 10 | PA_SW | D.O | PA ON | - | - |
| 11 | T/R SW | D.O | Transmit | - | - |
| 12 | RX_DATA | D.I | Active | - | - |
| 13 | SYEN | D.O | Active | - | - |
| 14 | SYDA | D.O | Active | - | - |
| 15 | SYCL | D.O | Active | - | - |
| 16 | TX_DATA | A.O | Active | - | - |
| 17 | KEY_IN | D.I | No Key | - | - |
| 18 | KEY_IN | D.I | No Key | - | - |
| 19 | KEY_IN | D.I | No Key | - | - |
| 20 | KEY_IN | D.I | No Key | - | - |
| 21 | KEY_IN | D.I | No Key | - | - |
| 22 | (NO USE) | D.O | - | - | - |
| 23 | Reference clock | D.O | Active | - | - |
| 24 | VDD | - | - | - | - |
| 25 | VSS | - | - | - | - |
| 26 | POWER_SW | A.I | No Key | - | - |
| 27 | CHARGE_DET | A.I | Charge | - | - |
| 28 | DCDCDRV | D.O | Active | - | - |
| 29 | DCDCCMR | A.I | - | - | - |
| 30 | RESET | A.I | Normal | - | - |
| 31 | VSSO | - | - | - | - |
| 32 | LOAD | A.I | - | - | - |
| 33 | XTAL | A.I | - | - | - |
| 34 | VDDPM | A.O | - | - | - |
| 35 | VDDLO | A.O | - | - | - |
| 36 | VDDBAT | A.I | - | - | - |
| 37 | VDDLR | - | - | - | - |
| 38 | CHARGE_START | A.O | - | - | for charge |
| 39 | VDDA | - | - | - | - |
| 40 | VSSA | - | - | - | - |
| 41 | LSRN | A.O | - | - | - |
| 42 | LSRP | A.O | - | - | - |
| 43 | BANDGAP_REF | A.O | - | - | - |
| 44 | MICS | A.O | - | - | - |
| 45 | MICP | A.I | - | - | - |

| Pin | Description | I/O | Hi | Hi-z | Remarks |
|---|---|---|---|---|---|
| 46 | MICN | A.I | - | - | - |
| 47 | Reference Voltage | A.O | - | - | - |
| 48 | RSSI | A.I | - | - | - |
| 49 | P0.4 | D.I | - | - | - |
| 50 | AD4N | A.I | - | - | - |
| 51 | AD4P | A.I | - | - | - |
| 52 | (NO USE) | D.I | - | - | - |
| 53 | KEY_STRB | D.O | Active | - | - |
| 54 | KEY_STRB | D.O | Active | - | - |
| 55 | KEY_STRB | D.O | Active | - | - |
| 56 | LCD_SEGMENT | D.O | Active | - | - |
| 57 | LCD_SEGMENT | D.O | Active | - | - |
| 58 | LCD_SEGMENT | D.O | Active | - | - |
| 59 | KEY_STRB | D.O | Active | - | - |
| 60 | KEY_STRB | D.O | Active | - | - |
| 61 | LCD_SEGMENT | D.O | Active | - | - |
| 62 | LCD_SEGMENT | D.O | Active | - | - |
| 63 | VDD | - | - | - | - |
| 64 | VSS | - | - | - | - |
| 65 | VDD for EEPROM | D.O | - | - | - |
| 66 | I2DAT | D.I/O | Active | - | - |
| 67 | I2CLK | D.I/O | Active | - | - |
| 68 | MODE | D.I | - | - | - |
| 69 | R2 | D.I | - | - | - |
| 70 | (NO USE) | D.O | - | - | - |
| 71 | VBACK/P0.7 | D.I | - | - | - |
| 72 | LCD_SEGMENT | D.O | Active | - | - |
| 73 | LCD_SEGMENT | D.O | Active | - | - |
| 74 | LCD_SEGMENT | D.O | Active | - | - |
| 75 | LCD_SEGMENT | D.O | Active | - | - |
| 76 | LCD_SEGMENT | D.O | Active | - | - |
| 77 | VDDLI | - | - | - | - |
| 78 | LCD_SEGMENT | D.O | Active | - | - |
| 79 | LCD_SEGMENT | D.O | Active | - | - |
| 80 | LCD_SEGMENT | D.O | Active | - | - |
| 81 | LCD_SEGMENT | D.O | Active | - | - |
| 82 | LCD_SEGMENT | D.O | Active | - | - |
| 83 | LCD_SEGMENT | D.O | Active | - | - |
| 84 | LCD_SEGMENT | D.O | Active | - | - |
| 85 | VSS | - | - | - | - |
| 86 | VDD | - | - | - | - |
| 87 | LCD_SEGMENT | D.O | Active | - | - |
| 88 | (NO USE) | D.O |  | - | - |
| 89 | Power Select | D.O | Low Power | - | - |
| 90 | LCD_SEGMENT | D.O | Active | - | - |

| Pin | Description | I/O | Hi | Hi-z | Remarks |
|---|---|---|---|---|---|
| 91 | LCD_SEGMENT | D.O | Active | - | - |
| 92 | LCD_SEGMENT | D.O | Active | - | - |
| 93 | LCD_SEGMENT | D.O | Active | - | - |
| 94 | LCD_SEGMENT | D.O | Active | - | - |
| 95 | LCD_SEGMENT | D.O | Active | - | - |
| 96 | LCD_SEGMENT | D.O | Active | - | - |
| 97 | LCD_SEGMENT | D.O | Active | - | - |
| 98 | LCD_SEGMENT | D.O | Active | - | - |
| 99 | LCD_SEGMENT | D.O | Active | - | - |
| 100 | LCD_SEGMENT | D.O | Active | - | - |

# 27. EEPROM LAYOUT (BASE UNIT)

## 27.1. Scope

**The purpose of this section is to describe the layout of the EEPROM (IC1) for the KX-TCD410 Base Unit.**
**The EEPROM contains hardware, software, and user specific parameters. Some parameters are set during production of the base e.g. crystal frequency adjustment at address 0000 and 0001, some are set by the user configuration e.g. ringer volume at address 0220, and some are set during normal use of the phone e.g. meter pulse billing at address 0140..015F.**

## 27.2. Introduction

**The base unit uses a 32K bit (32 x 8) serial EEPROM (IC1) for storing volatile parameters. All parameters are set up before the base leaves the factory. Some of these are vital for the operation of the hardware so a set of default parameters is programmed before the actual hardware fine-tuning can be initiated. This document lists all default settings with a short description.**
**In the tables below values in a range that are similar are not repeated; i.e. Address 00 to 01 contains the value 00 simply means that the value 00 is repeated in all addresses in the range. All values in this document are in hexadecimal notation.**

| Type | Name | Description |
|---|---|---|
| D | default | The EEPROM location is preset to the Default value by the eeprom default l |
| A | adjust | The EEPROM location is set during the production test and should not be overwritten. The value is set by the eeprom default loader only if the locatic contains all 1's (byte: 0xFF, word FFFFh), i, e. it has never been set. |
| - | | EEPROM location which is not set at all. |
| d | default | Same as D but best-guess value and/or not verified. |

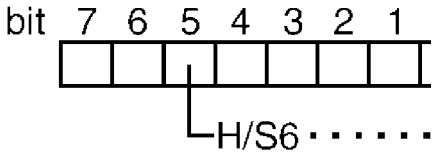
| | | |
|---|---|---|
| Country Setting | x | Default - no specific country setting, so revert to default value |

## 27.3. EEPROM Layout

### 27.3.1. General Setup

| Address | Default | Name | Country Setting | Type | Description |
|---|---|---|---|---|---|
| 0000-01 | 00 E0 | EepromOscillator | x | A | Frequency adjustment |
| 0002 | 20 | ModulationDeviation | x | A | Modulation adjustment |
| 0020 | - | RFPI (ID for Base Unit) | x | A | RFPI |
| 0025-0026 | 00 00 | AC (Base PIN code) | x | D | AC code |
| 0028 | 00 | TBR22Test | x | - | TBR22 test |
| 0030-0034 | FF .. FF | IPUI_1 (ID for H/S 1) | x | D | Ipui for handset 1. If set to FF .. (5bytes) the handset is not enrolled. |
| 0035-0039 | FF .. FF | IPUI_2 (ID for H/S 2) | x | D | Ipui for handset 2. If set to FF .. (5bytes) the handset is not enrolled. |
| 003A-003E | FF .. FF | IPUI_3 (ID for H/S 3) | x | D | Ipui for handset 3. If set to FF .. (5bytes) the handset is not enrolled. |
| 003F-0043 | FF .. FF | IPUI_4 (ID for H/S 4) | x | D | Ipui for handset 4. If set to FF .. (5bytes) the handset is not enrolled. |
| 0044-0048 | FF .. FF | IPUI_5 (ID for H/S 5) | x | D | Ipui for handset 5. If set to FF .. (5bytes) the handset is not enrolled. |
| 0049-004D | FF .. FF | IPUI_6 (ID for H/S 6) | x | D | Ipui for handset 6. If set to FF .. (5bytes) the handset is not enrolled. |
| 004E-008F | - | Reserved | x | - | Protocol data |
| 0090-009F | - | UAK_1 | x | - | UAK for hanset 1 (for factory u |
| 00A0-00AF | - | UAK_2 | x | - | UAK for hanset 2 (for factory u |
| 00B0-00BF | - | UAK_3 | x | - | UAK for hanset 3 (for factory u |
| 00C0-00CF | - | UAK_4 | x | - | UAK for hanset 4 (for factory u |
| 00D0-00DF | - | UAK_5 | x | - | UAK for hanset 5 (for factory u |
| 00E0-00EF | - | UAK_6 | x | - | UAK for hanset 6 (for factory u |

### 27.3.2. Switch Control

| Address | Default | Name | Country Setting | Type | Description |
|---|---|---|---|---|---|
| 09F1 | 00 | HsRegInfo.RegFlags | x | D | Handset registration info - registra OFF<br>  <br>1=reg, 0=no reg |
| 09F2 | 00 | HsRegInfo.EmcFlags | x | D | Handset registration info - EMC fla<br>Bit<br>6..7: not used<br>0..5: handset 1..6 info, 1=known , 0 unknown |
| 09F3 | 21 | RingMode | x | D | Ring mode. Modes used in KAMMA and 21h.<br>Bit<br>7..5: Mode (001=group)<br>4 : Not used<br>3..0: Id (001= id of first group) |

### 27.3.3. Flash Time setting

| Address | Default | Name | Country Setting | Type | Description |
|---|---|---|---|---|---|
| 0F0B | 08 | CalibBreakTime[0] | 0A | D | Calibrated loop-break time for s break<br>Unit: 10 ms, defaultst to 80 ms |
| 0F0C | 14 | CalibBreakTime[1] | 3C | D | Calibrated loop-break time for s break<br>Unit: 10 ms, defaultst to 200 ms |
| 0F0D | 46 | CalibBreakTime[2] | x | D | Calibrated loop-break time for s break<br>Unit: 10 ms, defaultst to 700 ms |

### 27.3.4. Clip (Caller ID) configuration

| Address | Default | Name | Country Setting | Type | Description |
|---|---|---|---|---|---|
| 0F1C | 70 | Detect | 72 | D | CLIP detect configuration<br>Bit<br>0-2: Mode: 0: Learn mode, 1: I<br>only, 2: FSK only, 3: Generic r<br>Russian CLIP only<br>3: Unused4<br>4: Onhook: 1=enable 0=disabl<br>5: Offhookk: 1=enable 0=disa<br>6: Msgwaiting: 1=enable 0=dis<br>7: Unused7 |
| 0F37..38 | 3D 01 | Parse.Configuration | 3D 04 | D | Clip parse set configuration<br>Bit<br>0: Etsi: 1=enable 0=disable<br>1: ForwardNumber: 1=enable<br><br>2: Danish: 1=enable 0=disable<br>3: Dutch: 1=enable 0=disable<br>4: Canadian: 1=enable 0=disa<br>5: Swedish: 1=enable 0=disab<br>6: UserDefined: 1=enable 0=d<br>7: KPN vmwi: 1=enable 0=disa<br>8: ProtocolPriority:<br>If 2 mutually exclusive parame<br>occurs, the 1st in the protoco<br>message has priority.<br>1=enable 0=disable<br>9: UseCallType:<br>Verify the Call Type paramete<br>available, when receiving Call<br>CLIP at busy subscriber.<br>1=enable 0=disable<br>10: AddTop0IfNo0<br>Automatic addition of 0 if top<br>ID is not 0.<br>1=enable 0=disable<br>11: DtmfDigitsOnly<br>Parse DTMF clip without start<br>stop code.<br>1=enable 0=disable<br>12..15: Reserved12..Reserved |

### 27.3.5. BsUiTask settings

| Address | Default | Name | Country Setting | Type | Description |
|---|---|---|---|---|---|
| 0F4B | 01 | Config1 | 03 | D | BsUiTask configuration (MSB)<br>Bits 1=enable 0=disable<br>0: AmPmClockSettingEnabled, (<br>1: ClipDetectionSettingEnabled<br>2: AkzMenuEnabled, disabled<br>3: HakzMenuEnabled, disabled<br>4: RussianClipSttingEnabled, di<br>5: SmscSendNumberSettingEna<br>disabled<br>6: SMSPabxSupportSettingEnal<br>disabled<br>7: Unused |
| 0F4C | F7 | Config2 | 03 | D | BsUiTask configuration (LSB)<br>Bits 1=enable 0=disable<br>0: FlashTime1Enabled, enabled<br>1: FlashTime2Enabled, enabled<br>2: FlashTime3Enabled, enabled<br>3: KeyClicksEnable, disabled<br>4: ARSCarrierMenuEnabled, ena<br>5: ARSIntDeletionMenuEnabled,<br>6: ARSMultipleCarrierMenuEnab<br>enabled<br>7: ARSMultipleAreaCodeMenuE<br>enabled |
| 0F4E | 0F | Config2 | FF | D | BsUiTask configuration 2<br>Bits 1=enable 0=disable<br>0: RingerModeMenuEnabled, en<br>1: CallRestrictionMenuEnabled,<br>2: CancelHandsetMenuEnabled<br>3: BaseToneMenusEnabled, ena<br>4-7: Unused |

# 28. EEPROM LAYOUT (HANDSET)

## 28.1. Scope

**The purpose of this section is to describe “layout of the EEPROM (IC2) KX-A141 Handset”.**
**The EEPROM contains hardware, software, and user specific parameters. Some parameters are set during production of the handset e.g. crystal oscillator adjustment at 0000..01, some are set by the user when configuring the handset e.g. ringer volume at 0F38, and some during normal use of the phone e.g. redial memory at 0311..0392.**

## 28.2. Introduction

**The handset uses a 32k bit serial EEPROM (IC2) for storing volatile parameters. All parameters are set up before the handset the factory. Some of these are vital for the operation of the hardware so a set of default parameters is programmed before the actual hardware fine-tuning can be initiated. This document lists all default settings with a short description.**
**This document lists all default parameters with a short description.**
**In the tables below values in a range that are similar are not repeated; i.e. Address 00 to 01 contains the value 00 simply means that the value 00 is repeated in all addressee in the range.**

| Type | Name | Description |
|---|---|---|
| D | default | The EEPROM location is preset to the Default value by the eeprom defau |
| A | adjust | The EEPROM location is set during the production test and should not b overwritten. The value is set by the eeprom default loader only if the loca contains 0xFF, i, e. it has never been set. |
| - | | EEPROM location which is not set at all. |

## 28.3. EEPROM contents

### 28.3.1. General Setup

| Address | Default | Name | Type | Description |
|---|---|---|---|---|
| 0000-0001 | 00 | EepromOscillator | A | Frequency adjustment |
| 0002 | 20 | ModulationDeviation | A | Mudulation adjustment |
| 0030-0034 | 00 | IPEI (ID for Handset) | A | IPEI |
| 0036-003A | FF | PARK_1 (ID for Base 1) | - | PARK for registration 1 |
| 003B-003F | FF | PARK_2 (ID for Base 2) | - | PARK for registration 2 |
| 0040-0044 | FF | PARK_3 (ID for Base 3) | - | PARK for registration 3 |
| 0045-0049 | FF | PARK_4 (ID for Base 4) | - | PARK for registration 4 |
| 004A-004D | FF | PLI_1-PLI_4 | D | Pli for registration 1-4. If set to FF t registration is deleted. |

### 28.3.2. Signal detection (for factory use only)

| Address | Default | Name | Country Setting | Type | Description |
|---|---|---|---|---|---|
| 0100-0104 | - | RFPI_1 (Base 1) | - | - | RFPI for registration 1 |
| 0105 | - | SerClass_1 | - | - | Service class for registration 1 |
| 0106 | - | LAL_1 | - | - | Location area level for registratior |
| 0107 | - | IPUI_LEN_1 | - | - | IPUI length for registration 1 |
| 0108-0114 | - | IPUI_1 | - | - | IPUI for registration 1 |
| 0115 | - | ZAP_1 | - | - | ZAP for registration 1 |
| 0116 | - | STATUS_1 | - | - | Status for registration 1 |
| 0117-126 | - | UAK_1 | - | - | UAK for registration 1 |
| 0130-134 | - | RFPI_2 (Base 2) | - | - | RFPI for registration 2 |
| 0135 | - | SerClass_2 | - | - | Service class for registration 2 |
| 0136 | - | LAL_2 | - | - | Location area level for registratior |
| 0137 | - | IPUI_LEN_2 | - | - | IPUI length for registration 2 |
| 0138-0144 | - | IPUI_2 | - | - | IPUI for registration 2 |
| 0145 | - | ZAP_2 | - | - | ZAP for registration 2 |
| 0146 | - | STATUS_2 | - | - | Status for registration 2 |
| 0147-0156 | - | UAK_2 | - | - | UAK for registration 2 |
| 0160-0164 | - | RFPI_3 (Base 3) | - | - | RFPI for registration 3 |
| 0165 | - | SerClass_3 | - | - | Service class for registration 3 |
| 0166 | - | LAL_3 | - | - | Location area level for registratior |
| 0167 | - | IPUI_LEN_3 | - | - | IPUI length for registration 3 |
| 0168-0174 | - | IPUI_3 | - | - | IPUI for registration 3 |
| 0175 | - | ZAP_3 | - | - | ZAP for registration 3 |
| 0176 | | STATUS_3 | - | - | status for registration 3 |
| 0177-0186 | - | UAK_3 | - | - | UAK for registration 3 |
| 0190-0194 | - | RFPI_4 (Base 4) | - | - | RFPI for registration 4 |
| 0195 | - | SerClass_4 | - | - | Service class for registration 4 |
| 0196 | - | LAL_4 | - | - | Location area level for registratior |
| 0197 | - | IPUI_LEN_4 | - | - | IPUI length for registration 4 |
| 0198-01A4 | - | IPUI_4 | - | - | IPUI for registration 4 |
| 01A5 | - | ZAP_4 | - | - | ZAP for registration 4 |
| 01A6 | - | STATUS_4 | - | - | UAK for registration 4 |
| 01A7-01B6 | - | UAK_4 | - | - | UAK for registration 4 |
| 0450-0451 | - | HSPinCode | x | - | 4 BCD Digits |

| Address | Default | Name | Country Setting | Type | Description |
|---|---|---|---|---|---|
| 0462 | 00 | Language | x | D | 00 = English<br>01 = Spanish<br>02 = French<br>03 = Italian<br>04 = Dutch<br>05 = Turkish<br>06 = Hungarian<br>07 = Portuguese<br>08 = Polish<br>09 = Command<br>0A = German |
| 0467 | 00 | FactoryLanguageSetting | x | D | Factory setting for language:<br>00 = English<br>01 = Spanish<br>02 = French<br>03 = Italian<br>04 = Dutch<br>05 = Turkish<br>06 = Hungarian<br>07 = Portuguese<br>08 = Polish<br>09 = Command<br>0A = German |

### 28.3.3. Battery Parameters

| Address | Default | Name | Type | Description |
|---|---|---|---|---|
| 0F04 | 9A | LowVoltage | A | Voltage on which to start battery lo<br>indication.<br>The voltage has to be measured ur<br>value for<br>8 seconds before the handset star<br>signaling low battery.<br>LowVoltage[eeprom]=[ADC-steps]<br>LowVoltage[mV](14.35[mV/step]) |

### 28.3.4. Default Audio-Parameters

| Address | Default | Name | Country Setting | Type | Description |
|---|---|---|---|---|---|
| 0F36 | 46 | GR-offset for volumestep 1 | x | D | Bit7: AOG<br>Bit6: AOG2<br>Bit5, bit0: Gain-receive (values ra<br>from 0x00 to 0x30, each step repr<br>1 dB) |
| 0F37 | 5F | GR-offset for volumestep 2 | x | A | Bit7: AOG<br>Bit6: AOG2<br>Bit5, bit0: Gain-receive (values ra<br>from 0x00 to 0x30, each step repr<br>1 dB) |
| 0F38 | 46 | GR-offset for volumestep 3 | 00 | D | Bit7: AOG<br>Bit6: AOG2<br>Bit5, bit0: Gain-receive offset to volumestep 2 (values ranging fro<br>0x30, each step representing 1 dE |
| 0F3F | 02 | EEVoiceVolume | x | D | Volume of the earpiece |

### 28.3.5. VolumeSetting Second Block

| Address | Default | Name | Country Setting | Type | Description |
|---|---|---|---|---|---|
| 0F54 | 01 | RecVolStoreEnabled | 01 | D | 00: Reciever volume will be reset t<br>value when hooking on.<br>01: Reciever volume will be stored<br>eeprom when set in conversation. |

# 29. HOW TO REPLACE FLAT PACKAGE IC

## 29.1. Preparation

**- PbF (: Pb free) Solder**

**- Soldering Iron**

**Tip Temperature of 700°F ± 20°F (370°C ± 10°C)**

**Note: We recommend a 30 to 40 Watt soldering iron. An expert may be able to use a 60 to 80 Watt iron where someone with less experience could overheat and damage the PCB foil.**

**- Flux**

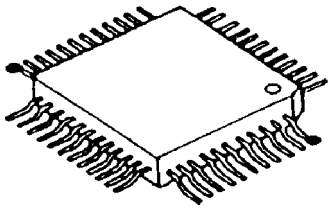
**Recommended Flux: Specific Gravity → 0.82.**

**Type → RMA (lower residue, non-cleaning type)**

**Note: See ABOUT LEAD FREE SOLDER (PbF: Pb free) ().**

## 29.2. Procedure

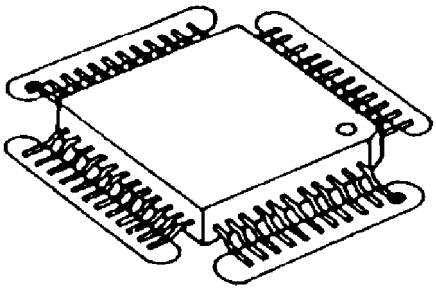
1. **Tack the flat pack IC to the PCB by temporarily soldering two diagonally opposite pins in the correct positions on the PCB.**



● – – – – – – Temporary soldering point.

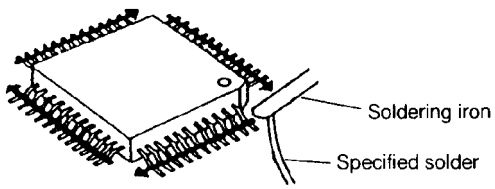
**Be certain each pin is located over the correct pad on the PCB.**

2. **Apply flux to all of the pins on the IC.**



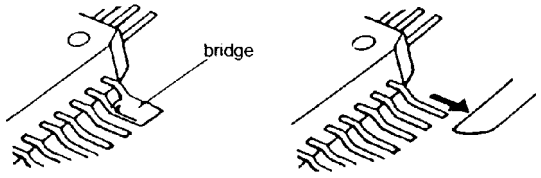
– – – – – – Flux

3. **Being careful to not unsolder the tack points, slide the soldering iron along the tips of the pins while feeding enough solder to the tip so that it flows under the pins as they are heated.**

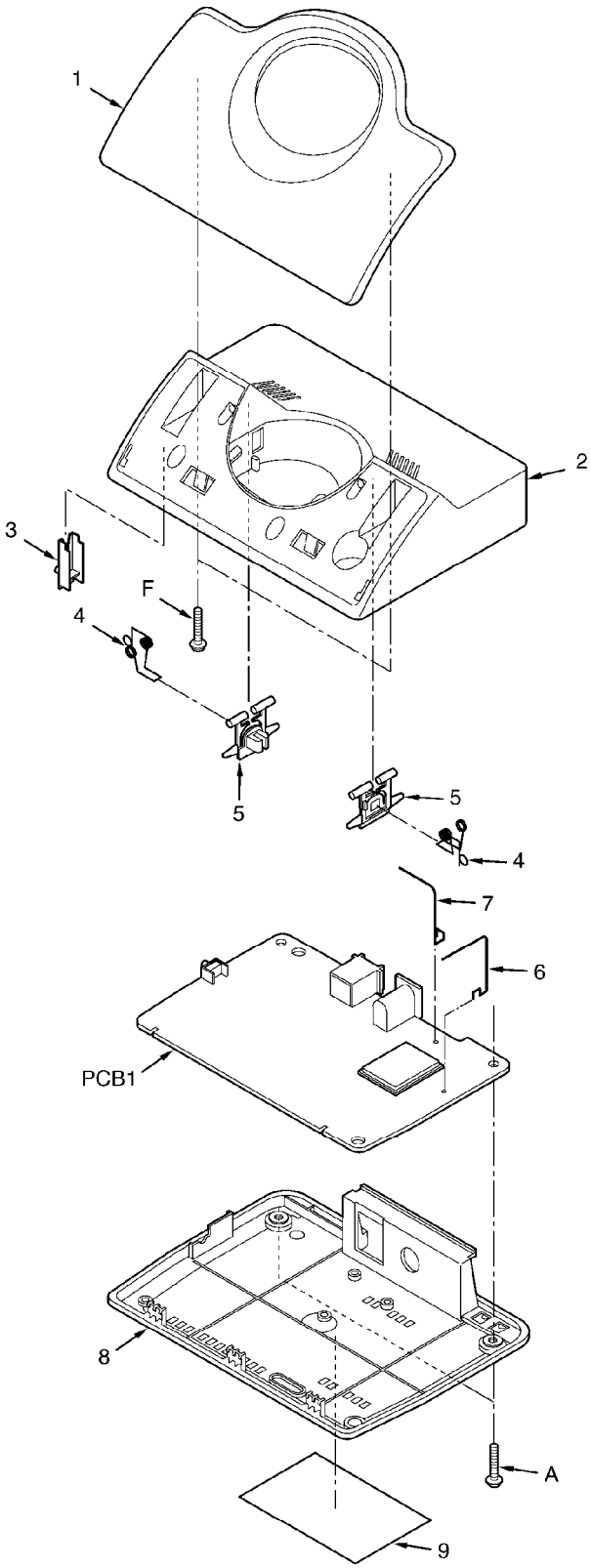


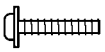
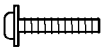

## 29.3. Modification Procedure of Bridge

1. **Add a small amount of solder to the bridged pins.**
2. **With a hot iron, use a sweeping motion along the flat part of the pin to draw the solder from between the adjacent pads.**

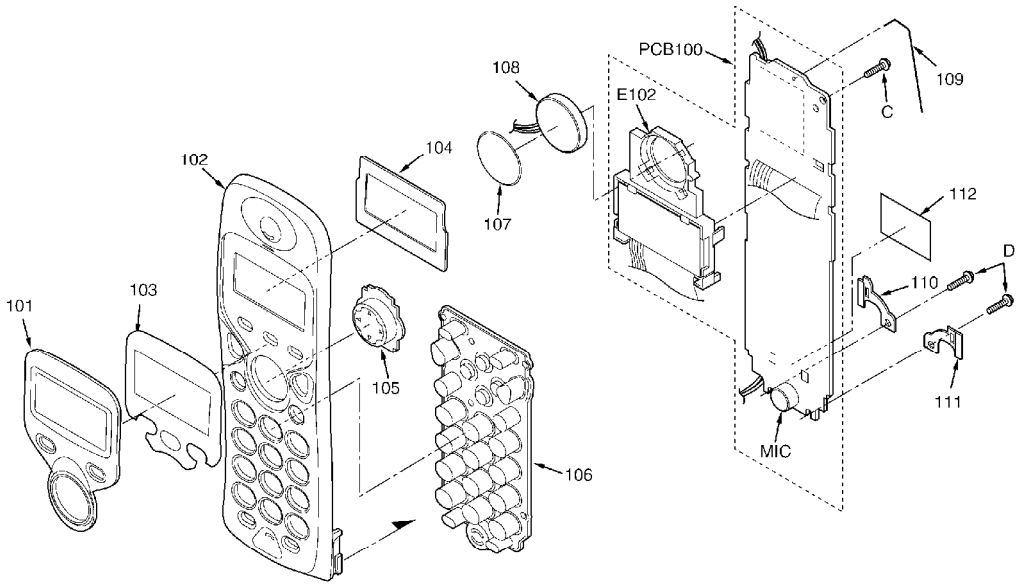


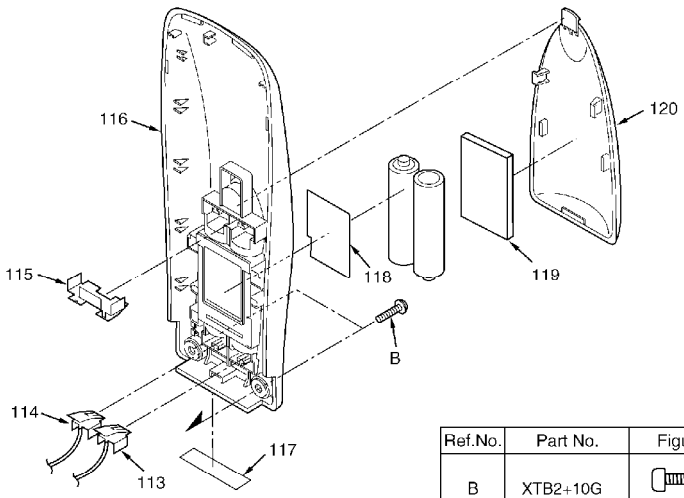

# 30. CABINET AND ELECTRICAL PARTS LOCATION (BASE UNIT)




| Ref.No. | Part No. | Figure |
|---|---|---|
| A | XTW26+12P |  φ2.6×12mm |
| F | XTW26+12P |  φ2.6×12mm |

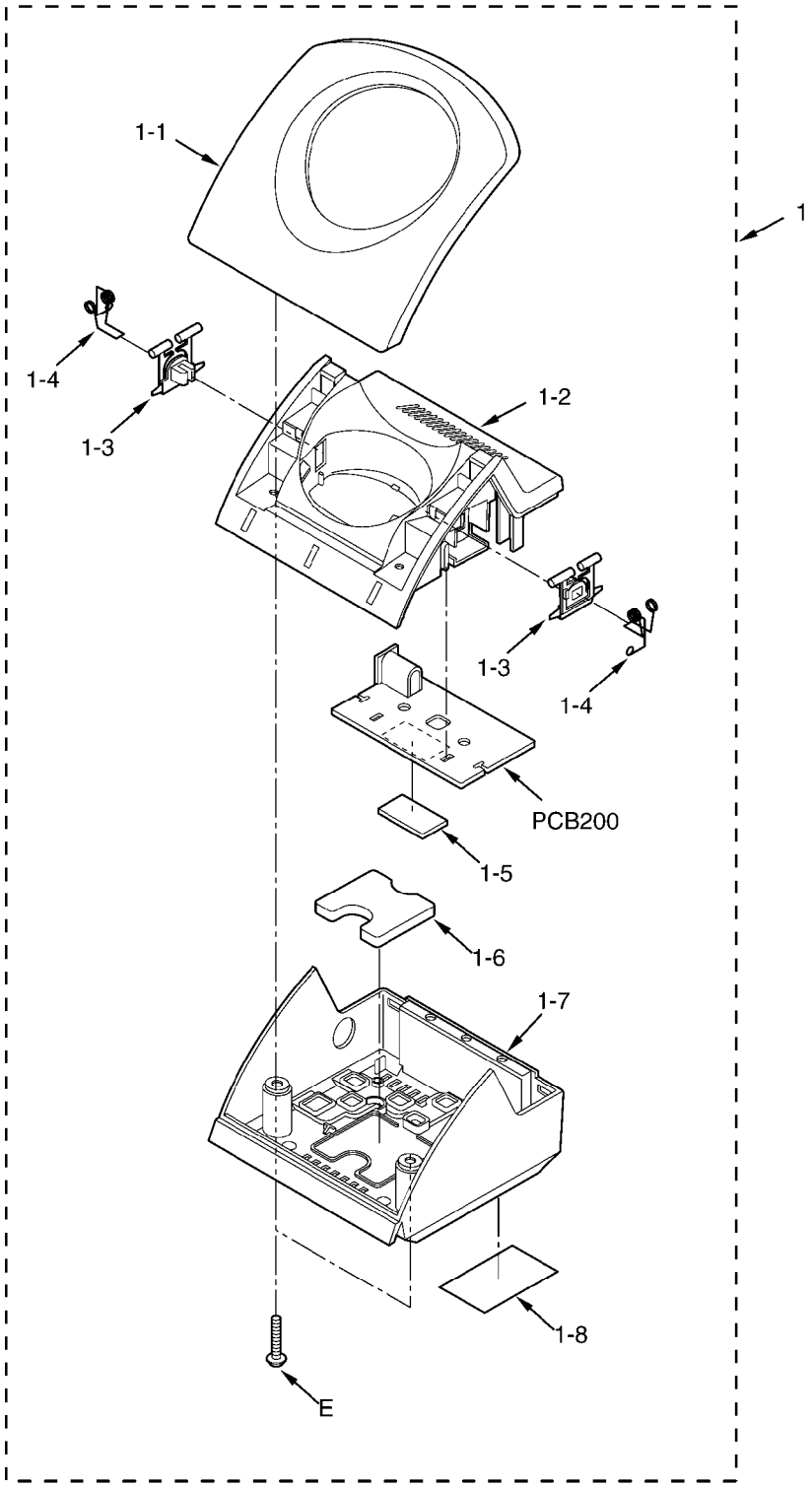
# 31. CABINET AND ELECTRICAL PARTS LOCATION (HANDSET)




| Ref.No. | Part No. | Figure |
|---|---|---|
| B | XTB2+10G | ø2.x10mm |
| C | XTB2+8G | ø2.x8mm |
| D | XTB2+8G | ø2.x8mm |

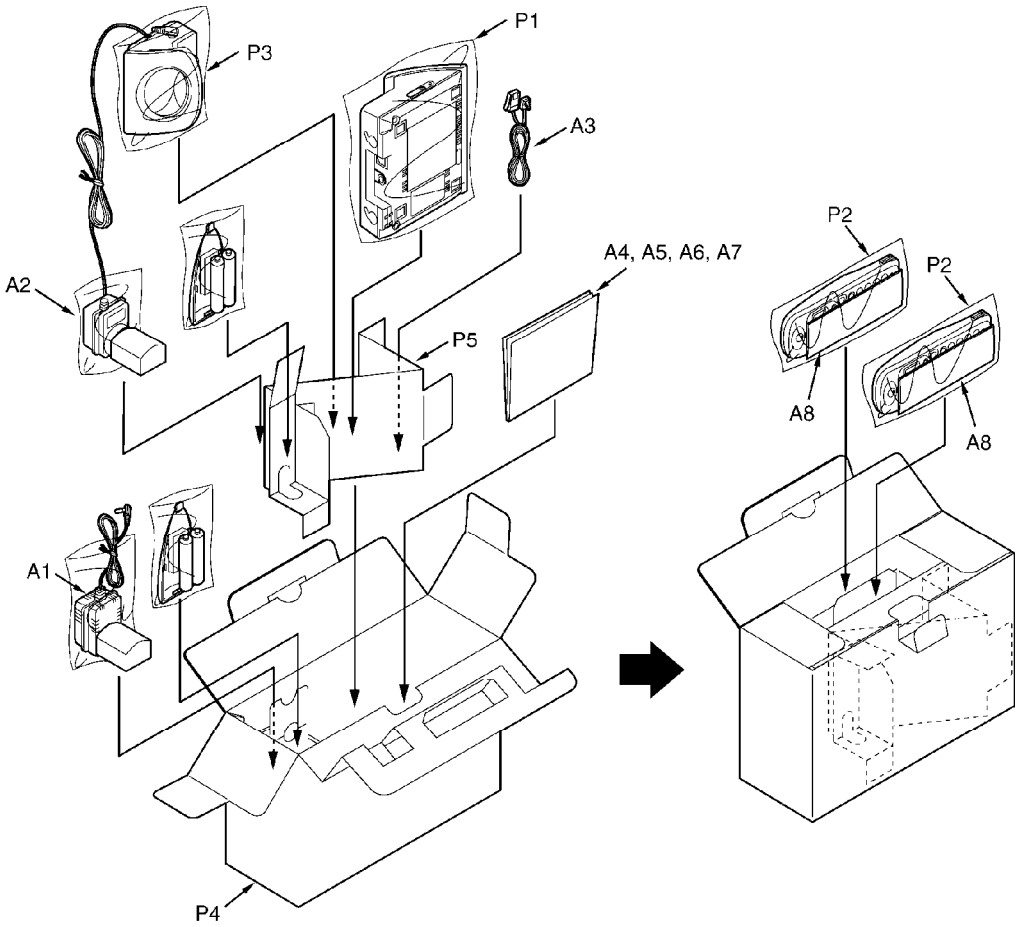
# 32. CABINET AND ELECTRICAL PARTS LOCATION (CHARGER UNIT)



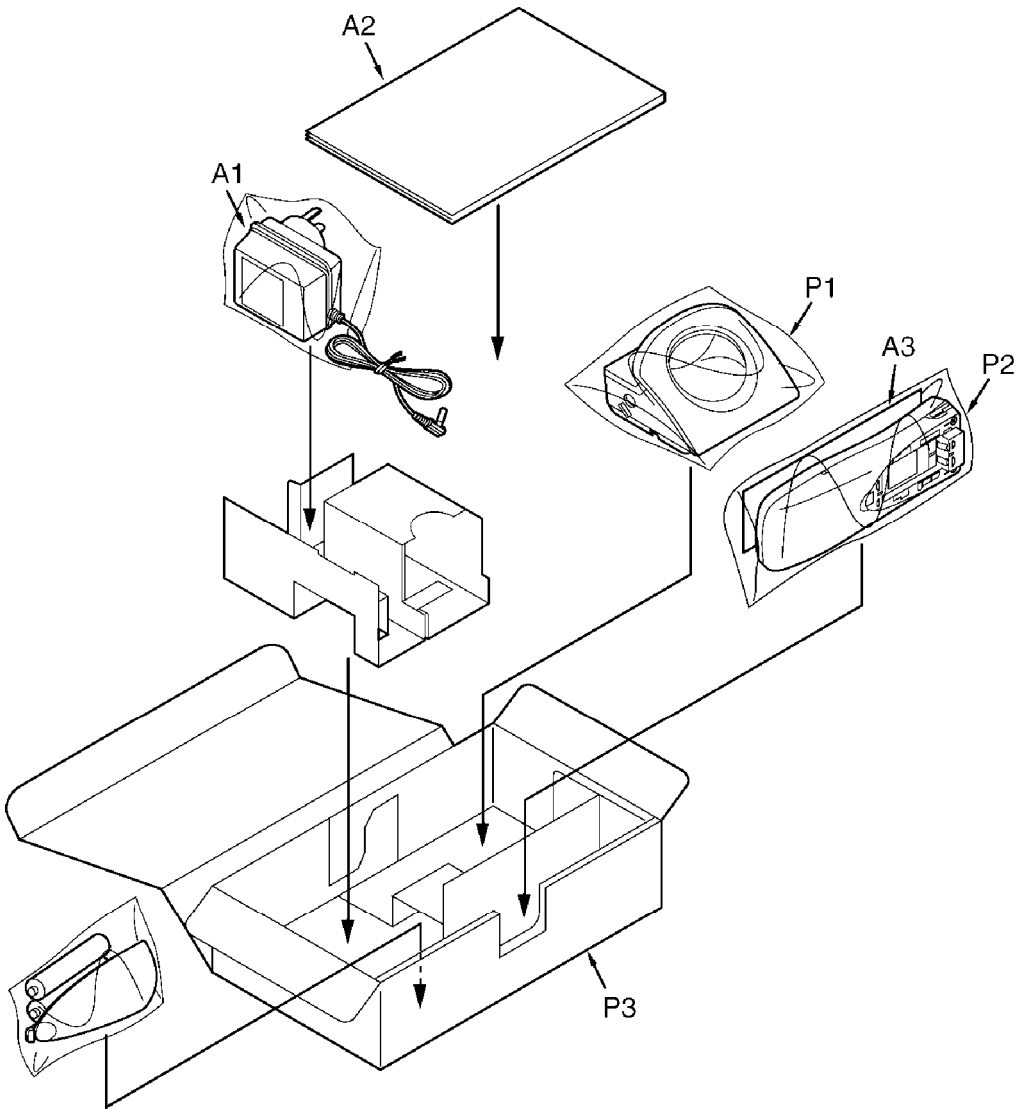

| Ref.No. | Part No. | Figure |
|---|---|---|
| E | XTW26+14P | $\phi$2.6 × 14mm |

# 33. ACCESSORIES AND PACKING MATERIALS

## 33.1. KX-TCD412NZM

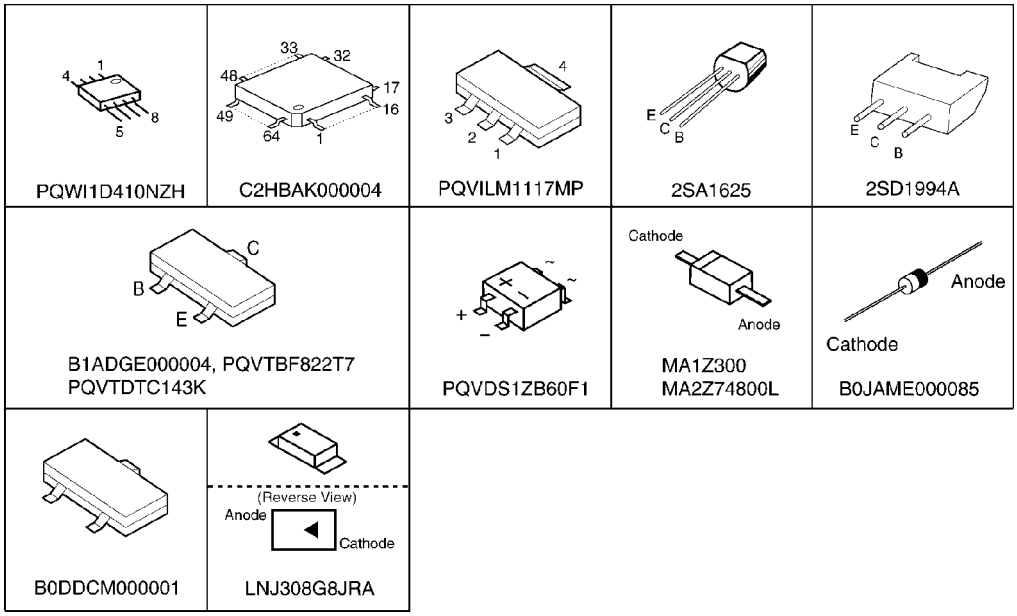



## 33.2. KX-A142NZM

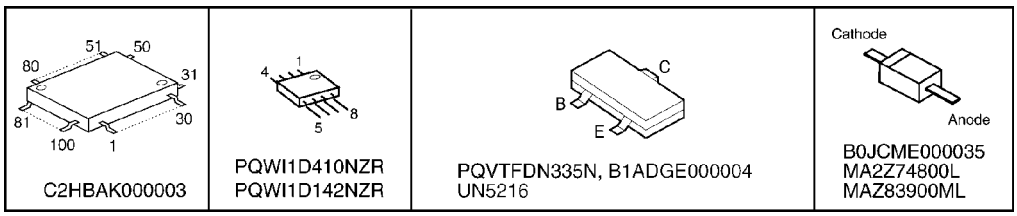



# 34. TERMINAL GUIDE OF THE ICs, TRANSISTORS AND DIODES

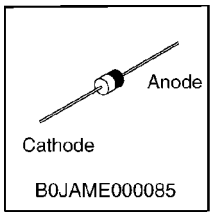
## 34.1. Base Unit




## 34.2. Handset




## 34.3. Charger Unit




# 35. REPLACEMENT PARTS LIST

## 1. RTL (Retention Time Limited)

**Note:**
**The marking (RTL) indicates that the Retention Time is limited for this item.**
**After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.**

## 2. Important safety notice

**Components identified by the ⚠ mark indicates special characteristics important for safety. When replacing any of these**

components, only use specified manufacture's parts.

3. The S mark means the part is one of some identical parts. For that reason, it may be different from the installed part.
4. ISO code (Example: ABS-94HB) of the remarks column shows quality of the material and a flame resisting grade about plastics.
5. RESISTORS & CAPACITORS
   Unless otherwise specified;
   All resistors are in ohms ( Ω ) K=1000 Ω , M=1000k Ω
   All capacitors are in MICRO FARADS ( μ F)P= μ μ F
   *Type & Wattage of Resistor

Type

| | | |
|---|---|---|
| ERC:Solid<br>ERDS:Carbon<br>ERJ:Chip | ERX:Metal Film<br>ERG:Metal Oxide<br>ER0:Metal Film | PQ4R:Chip<br>ERS:Fusible Resistor<br>ERF:Cement Resistor |

Wattage

| | | | | | |
|---|---|---|---|---|---|
| 10,16:1/8W | 14,25:1/4W | 12:1/2W | 1:1W | 2:2W | 3:3W |

*Type & Voltage Of Capacitor

Type

| | |
|---|---|
| ECFD:Semi-Conductor<br>ECQS:Styrol<br>ECUV,PQCUV,ECUE:Chip<br>ECQMS:Mica | ECCD,ECKD,ECBT,F1K,ECUV:Ceramic<br>ECQE,ECQV,ECQG:Polyester<br>ECEA,ECST,EEE:Electlytic<br>ECQP:Polypropylene |

Voltage

| ECQ Type | ECQG<br>ECQV Type | ECSZ Type | Others | |
|---|---|---|---|---|
| 1H:50V<br>2A:100V<br>2E:250V<br>2H:500V | 05:50V<br>1:100V<br>2:200V | 0F:3.15V<br>1A:10V<br>1V:35V<br>0J:6.3V | 0J :6.3V<br>1A :10V<br>1C :16V<br>1E,25:25V | 1V :35V<br>50,1H:50V<br>1J :16V<br>2A :100V |

## 35.1. Base Unit

### 35.1.1. Cabinet and Electrical Parts

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| 1 | PQGG10154W5 | GRILLE | ABS-ABS |
| 2 | PQKM10586Z4 | CABINET BODY | PS-HB |
| 3 | PQHR10962Z | OPTIC CONDUCTIVE PARTS, LED LENS | |
| 4 | PQJT10203Z | TERMINAL | |
| 5 | PQKE10356Z1 | GUIDE, CHARGE TERMINAL CASE | POM-HB |
| 6 | PQSA10131Z | ANTENNA, MAIN | |
| 7 | PQSA10132Z | ANTENNA, SUB | |
| 8 | PQYF10560Z4 | CABINET COVER | ABS-ABS |
| 9 | PQGT16007Z | NAME PLATE | |

### 35.1.2. Main P.C.Board Parts

**Note:**
**(*1)When replacing IC1, data need to be written to it with PQZZTCD410NZ.**

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| PCB1 | PQWP1D410NZH | MAIN P.C.BOARD ASS'Y (RTL) | |
| | | (ICS) | |
| IC1 | PQWI1D410NZH | IC (*1) | S |
| IC2 | C2HBAK000004 | IC | |
| Q9 | PQVILM1117MP | IC | S |
| | | (TRANSISTORS) | |
| Q2 | 2SA1625 | TRANSISTOR(SI) | S |
| Q3 | PQVTBF822T7 | TRANSISTOR(SI) | |
| Q6 | 2SD1994A | TRANSISTOR(SI) | |
| Q8 | B1ADGE000004 | TRANSISTOR(SI) | |
| Q10 | PQVTDTC143K | TRANSISTOR(SI) | |
| | | (DIODES) | |
| D2 | PQVDS1ZB60F1 | DIODE(SI) | S |
| D3 | MA1Z300 | DIODE(SI) | |
| D4 | B0JAME000085 | DIODE(SI) | |
| D5 | MA2Z74800L | DIODE(SI) | |
| DA1 | B0DDCM000001 | DIODE(SI) | |
| LED1 | LNJ308G8JRA | LED | |
| | | (COILS) | |
| L1 | PQLQR4D4R7K | COIL | |
| L3 | PQLQR2M33NK | COIL | |
| | | (JACKS) | |
| J1 | PQJJ1TB26Z | JACK, MODULATOR | S |
| J2 | PQJJ1B4Y | JACK, DC | |
| | | (RESISTORS) | |
| R1 | ERJ3GEYJ155 | 1.5M | |
| R2 | ERJ3GEYJ155 | 1.5M | |
| R3 | ERJ3GEYJ224 | 220K | |
| R4 | ERJ3GEYJ184 | 180K | |
| R5 | ERJ3GEYJ224 | 220K | |
| R6 | ERJ3GEYJ184 | 180K | |
| R7 | ERJ3GEYJ104 | 100K | |
| R8 | ERJ3GEYJ272 | 2.7K | |
| R9 | ERJ3GEYJ103 | 10K | |
| R10 | ERJ3GEYJ222 | 2.2K | |
| R12 | PQ4R18XJ000 | 0 | S |
| R16 | ERJ3GEYJ133 | 13K | |
| R18 | ERJ3GEYJ332 | 3.3K | |
| R19 | ERJ12YJ220 | 22 | |
| R20 | ERJ12YJ560 | 56 | |
| R21 | ERJ3GEYJ104 | 100K | |
| R22 | ERJ3GEYJ333 | 33K | |
| R23 | ERJ3GEYJ560 | 56 | |
| R25 | ERJ3GEYJ221 | 220 | |
| R28 | ERJ3GEYJ152 | 1.5K | |
| R29 | ERJ3GEYJ101 | 100 | |
| R30 | ERJ3GEYJ101 | 100 | |
| R31 | ERJ3GEYJ101 | 100 | |
| R32 | ERJ3GEYJ560 | 56 | |
| R36 | ERJ3GEY0R00 | 0 | |
| R38 | ERJ3GEYJ330 | 33 | |
| R41 | ERJ3GEYJ101 | 100 | |
| R42 | ERJ3GEYJ221 | 220 | |
| R43 | ERJ1WYJ330 | 33 | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R44 | ERJ1WYJ330 | 33 | |
| R52 | ERJ3GEY0R00 | 0 | |
| R53 | ERJ3GEYJ565 | 5.6M | |
| R54 | ERJ3GEYJ184 | 180K | |
| R57 | ERJ3GEYJ103 | 10K | |
| R58 | ERJ3GEYJ103 | 10K | |
| R66 | ERJ3GEYJ390 | 39 | |
| R67 | ERJ3GEYJ390 | 39 | |
| R68 | ERJ3GEYJ151 | 150 | |
| R77 | PQ4R10XJ000 | 0 | S |
| R78 | ERJ3GEYJ181 | 180 | |
| R79 | ERJ3GEYJ181 | 180 | |
| R81 | ERJ3GEYJ565 | 5.6M | |
| R82 | ERJ3GEYJ184 | 180K | |
| R86 | ERJ3GEY0R00 | 0 | |
| R87 | ERJ3GEY0R00 | 0 | |
| R88 | ERJ3GEY0R00 | 0 | |
| C80 | PQ4R10XJ000 | 0 | S |
| C86 | ERJ3GEY0R00 | 0 | |
| | | (CAPACITORS) | |
| C1 | ECKD2H681KB | 680P | S |
| C2 | ECKD2H681KB | 680P | S |
| C3 | ECQE2223KF | 0.022 | |
| C4 | ECQE2223KF | 0.022 | |
| C11 | ECUV1C273KBV | 0.027 | |
| C12 | PQCUV1C474KB | 0.47 | |
| C13 | PQCUV1A105KB | 1 | |
| C14 | PQCUV1C224KB | 0.22 | |
| C15 | ECEA1HKS100 | 10 | S |
| C16 | PQCUV1H104KR | 0.1 | |
| C17 | ECUV1H333KBV | 0.033 | S |
| C18 | ECUV1H100DCV | 10P | |
| C19 | ECUV1H100DCV | 10P | |
| C20 | ECUV1C104KBV | 0.1 | |
| C21 | ECUV1H100DCV | 10P | |
| C22 | PQCUV1C224KB | 0.22 | |
| C23 | ECUV1C104KBV | 0.1 | |
| C24 | ECUV1C104KBV | 0.1 | |
| C25 | ECEA1CKS100 | 10 | S |
| C26 | ECUV1C104KBV | 0.1 | |
| C27 | ECUV1C104KBV | 0.1 | |
| C28 | ECUV1C683KBV | 0.068 | |
| C29 | ECUV1C683KBV | 0.068 | |
| C30 | ECUV1H182KBV | 0.0018 | |
| C32 | ECUV1H270JCV | 27P | |
| C33 | ECUV1H1R0CCV | 1 | |
| C34 | ECUV1C104KBV | 0.1 | |
| C35 | ECUV1H333KBV | 0.033 | S |
| C36 | ECUV1C104KBV | 0.1 | |
| C37 | ECUV1C104KBV | 0.1 | |
| C38 | ECUV1C104KBV | 0.1 | |
| C40 | ECEA1AKA101 | 100 | |
| C41 | ECEA0JKA101 | 100 | |
| C43 | ECUV1H100DCV | 10P | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| C48 | ECUV1H330JCV | 33P | |
| C49 | ECUV1H103KBV | 0.01 | |
| C50 | ECUV1H100DCV | 10P | |
| C54 | ECUV1H060DCV | 6P | S |
| C55 | ECUV1H100DCV | 10P | |
| C56 | ECUV1H100DCV | 10P | |
| C57 | ECUV1H030CCV | 3P | |
| C58 | ECUV1H2R0CCV | 2 | |
| C66 | ECUV1H2R0CCV | 2 | |
| C67 | ECUV1A475KB | 4.7 | |
| C69 | ECUV1H2R0CCV | 2 | |
| C72 | ECUV1H2R0CCV | 2 | |
| C73 | ECUV1H100DCV | 10P | |
| C74 | ECUV1H103KBV | 0.01 | |
| C75 | PQCUV1H020CC | 2P | |
| C76 | ECUV1H060DCV | 6P | S |
| C78 | ECUV1H100DCV | 10P | |
| | | (OTHERS) | |
| S1 | K0H1BB000018 | SPECIAL SWITCH, TACTILE | |
| SA1 | PQVDDSS301L | VARISTOR (SURGE ABSORBER) | S |
| X1 | H0D103500003 | CRYSTAL OSCILLATOR | |

# 35.2. Handset

## 35.2.1. Cabinet and Electrical Parts

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| 101 | PQGP10225Z4 | PANEL, LCD | AS-HB |
| 102 | PQKM10587W5 | CABINET BODY (for KX-A141NZM) | ABS-HB |
| 102 | PQKM10587V5 | CABINET BODY (for KX-A142NZM) | ABS-HB |
| 103 | PQHS10553Z | TAPE, DOUBLE SIDE | |
| 104 | PQHS10554Z | SPACER, LCD | |
| 105 | PQBC10375Z1 | PUSH BUTTON, NAVI | |
| 106 | PQSX10224Q | KEYBOARD SWITCH, 20KEY | |
| 107 | PQHS10467Z | COVER, SP NET | |
| 108 | L0AD02A00016 | SPEAKER | |
| 109 | PQSA10133Z | ANTENNA | |
| 110 | PQJT10204Z | TERMINAL (L) | |
| 111 | PQJT10205Z | TERMINAL (R) | |
| 112 | PQHX11202Z | INSULATOR | |
| 113 | PQJC10058Z | BATTERY TERMINAL (+) | |
| 114 | PQJC10057Z | BATTERY TERMINAL (-) | |
| 115 | PQJC10056Z | BATTERY TERMINAL | |
| 116 | PQKF10582Z5 | CABINET COVER | ABS-HB |
| 117 | PQGT16008Z | NAME PLATE (for KX-A141NZM) | |
| 117 | PQGT16103Z | NAME PLATE (for KX-A142NZM) | |
| 118 | PQHX11221Z | PLASTIC PARTS, BATTERY COVER SHEET (for KX-A141NZM) | |
| 118 | PQHX11222Z | PLASTIC PARTS, BATTERY COVER SHEET (for KX-A142NZM) | |
| 119 | PQHS10561Y | SPACER, BATTERY COVER | |
| 120 | PQKK10134Z5 | LID, BATTERY COVER | ABS-HB |

## 35.2.2. Main P.C.Board Parts

**Note:**
**(*2)When replacing IC2, data need to be written to it with PQZZTCD410NZ.**

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| PCB100 | PQWP1D410NZR | MAIN P.C.BOARD ASS'Y (RTL) (for KX-TCD412NZM) | |
| PCB100 | PQWP1D142NZR | MAIN P.C.BOARD ASS'Y (RTL) (for KX-A142NZM) | |
| | | (ICs) | |
| IC1 | C2HBAK000003 | IC | |
| IC2 | PQWI1D410NZR | IC (for KX-TCD412NZM) (*2) | S |
| IC2 | PQWI1D142NZR | IC (for KX-A142NZM) (*2) | |
| IC3 | J3FKK0000003 | IC | |
| | | (TRANSISTORS) | |
| Q1 | PQVTFDN335N | TRANSISTOR(SI) | S |
| Q2 | B1ADGE000004 | TRANSISTOR(SI) | |
| Q3 | UN5216 | TRANSISTOR(SI) | |
| | | (DIODES) | |
| D1 | B0JCME000035 | DIODE(SI) | |
| D3 | MA2Z74800L | DIODE(SI) | |
| D4 | MA83900ML | DIODE(SI) | |
| D6 | MA2Z74800L | DIODE(SI) | |
| D7 | MA2Z74800L | DIODE(SI) | |
| | | (COILS) | |
| L2 | G1A470L00001 | COIL | |
| L3 | PQLQR4D4R7K | COIL | |
| L4 | G1C100MA0072 | COIL | |
| L5 | G1C100MA0072 | COIL | |
| F1 | PQLQR2M5N6K | COIL | S |
| | | (RESISTORS) | |
| R1 | ERJ3GEYJ222 | 2.2K | |
| R2 | ERJ8BQJR30 | 0.3 | |
| R3 | ERJ3GEYJ560 | 56 | |
| R4 | ERJ3GEYJ103 | 10K | |
| R5 | ERJ3GEYJ331 | 330 | |
| R6 | ERJ3GEYJ332 | 3.3K | |
| R7 | ERJ3GEYJ331 | 330 | |
| R8 | ERJ3GEYJ331 | 330 | |
| R11 | ERJ3GEY0R00 | 0 | |
| R17 | ERJ3GEY0R00 | 0 | |
| R18 | ERJ3GEYJ330 | 33 | |
| R19 | ERJ3GEYJ153 | 15K | |
| R20 | ERJ3GEY0R00 | 0 | |
| R21 | ERJ6RSJR10V | 0.1 | |
| R22 | ERJ3GEY0R00 | 0 | |
| R23 | ERJ3GEYJ2R2 | 2.2 | |
| R24 | ERJ3GEY0R00 | 0 | |
| | | (CAPACITORS) | |
| C2 | ECUV1A475KB | 4.7 | |
| C3 | ECUV1C104KBV | 0.1 | |
| C4 | ECUV1C104KBV | 0.1 | |
| C5 | ECST0JY475 | 4.7 | |
| C6 | ECUV1H100DCV | 10P | |
| C7 | ECUV1C104KBV | 0.1 | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| C8 | ECUV1H100DCV | 10P | |
| C10 | ECUV1H100DCV | 10P | |
| C11 | ECUV1H100DCV | 10P | |
| C12 | ECUV1H100DCV | 10P | |
| C14 | EEE1AA221P | 220 | |
| C15 | EEE1AA221P | 220 | |
| C16 | ECUV1H1R0CCV | 1 | |
| C17 | ECUV1H180JCV | 18P | |
| C18 | ECUV1C104KBV | 0.1 | |
| C20 | ECUV1C104KBV | 0.1 | |
| C21 | ECUV1C104KBV | 0.1 | |
| C22 | ECUV1C104KBV | 0.1 | |
| C23 | ECUV1C104KBV | 0.1 | |
| C24 | ECUV1C104KBV | 0.1 | |
| C26 | ECUV1C104KBV | 0.1 | |
| C27 | ECUV1C104KBV | 0.1 | |
| C28 | ECUV1C104KBV | 0.1 | |
| C29 | ECUV1C104KBV | 0.1 | |
| C30 | ECUV1C104KBV | 0.1 | |
| C31 | ECUV1H100DCV | 10P | |
| C33 | ECUV1A225KB | 2.2 | |
| C54 | ECUV1H100DCV | 10P | |
| C55 | ECUV1H020CCV | 2P | |
| C56 | ECUV1H020CCV | 2P | |
| C57 | ECUV1H330JCV | 33P | |
| C60 | ECUV1A475KB | 4.7 | |
| C62 | ECUV1A105KBV | 1 | |
| C63 | ECUV1H100DCV | 10P | |
| C64 | ECUV1A105KBV | 1 | |
| C65 | ECUV1H020CCV | 2P | |
| C66 | ECUV1H020CCV | 2P | |
| | | (OTHERS) | |
| MIC | L0CBAB000052 | MICROPHONE | |
| E102 | PQWLA141E | LCD ASS'Y | |
| X1 | H0D103500002 | CRYSTAL OSCILLATOR | |

# 35.3. Charger Unit

## 35.3.1. Cabinet and Electrical Parts

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| 1 | PQLV30018ZM1 | HANDSET CHARGER | |
| 1-1 | PQGG10155Y5 | GRILLE | ABS-HB |
| 1-2 | PQKM10591Z3 | CABINET BODY | PS-HB |
| 1-3 | PQKE10356Z1 | GUIDE, CHARGE TERMINAL CASE | POM-HB |
| 1-4 | PQJT10206Z | CHARGE TERMINAL | |
| 1-5 | PQHX10991Z | CUSHION, URETHANE FORM | |
| 1-6 | PQMH10426Z | WEIGHT | |
| 1-7 | PQYF10563Z3 | CABINET COVER | PS-HB |
| 1-8 | PQGT15735X | NAME PLATE | |

## 35.3.2. Main P.C.Board Parts

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| PCB200 | PQWPA142ESCH | MAIN P.C.BOARD ASS'Y (RTL) | |
| D1 | B0JAME000085 | DIODE(SI) | |
| | | (JACK) | |
| J1 | PQJJ1B4Y | JACK | S |
| | | (RESISTORS) | |
| R1 | ERJ1WYJ220 | 22 | |
| R2 | ERJ1WYJ270 | 27 | |

# 35.4. Accessories and Packing Materials

## 35.4.1. KX-TCD412NZM

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| A1 | PQLV19ALZ | AC ADAPTOR (for Base Unit) | ⚠ |
| A2 | PQLV200ALZ | AC ADAPTOR (for Charger Unit) | |
| A3 | PQJA87S | CORD, TELEPHONE | |
| A4 | PQQX13521Z | INSTRUCTION BOOK | |
| A5 | PQQW12772Z | QUICK GUIDE | |
| A6 | PQQW13148Z | LEAFLET | |
| A7 | PQQW13225Z | LEAFLET | |
| A8 | PQQW12846W | LEAFLET, RECHARGE | |
| P1 | PQPP10100Z | PROTECTION COVER (for Base Unit) | |
| P2 | PQPP10084Z | PROTECTION COVER (for Handset) | |
| P3 | PQPP10086Z | PROTECTION COVER (for Charger Unit) | |
| P4 | PQPK14000Z | GIFT BOX | |
| P5 | PQPD10563Z | CUSHION | |

## 35.4.2. KX-A142NZM

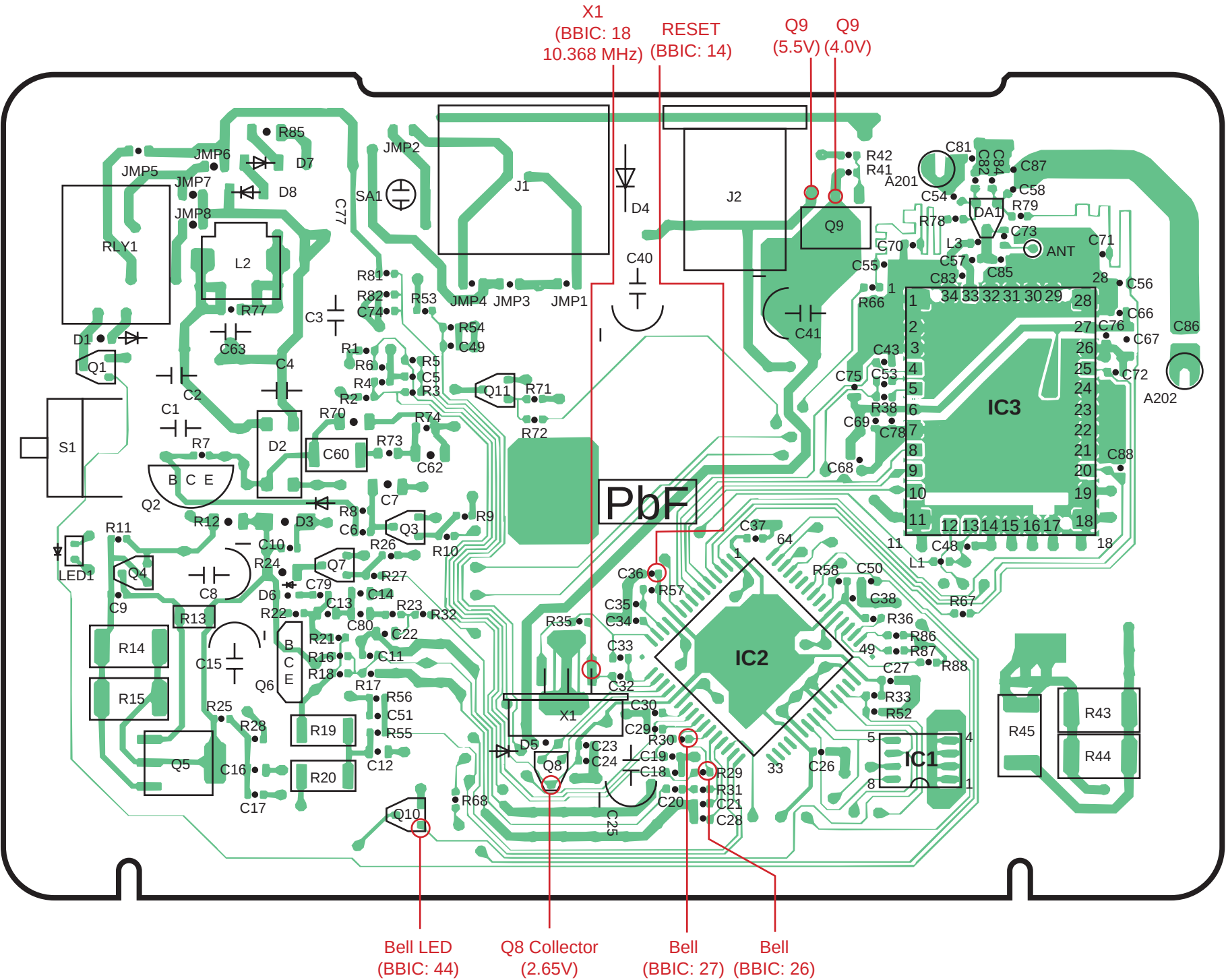
| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| A1 | PQLV200ALZ | AC ADAPTOR | ⚠ |
| A2 | PQQX13708Z | INSTRUCTION BOOK | |
| A3 | PQQW12846W | LEAFLET, RECHARGE | |
| P1 | PQPP10086Z | PROTECTION COVER (for Charger Unit) | |
| P2 | PQPP10084Z | PROTECTION COVER (for Handset) | |
| P3 | PQPK13899Z | GIFT BOX | |

# 35.5. Fixtures and Tools

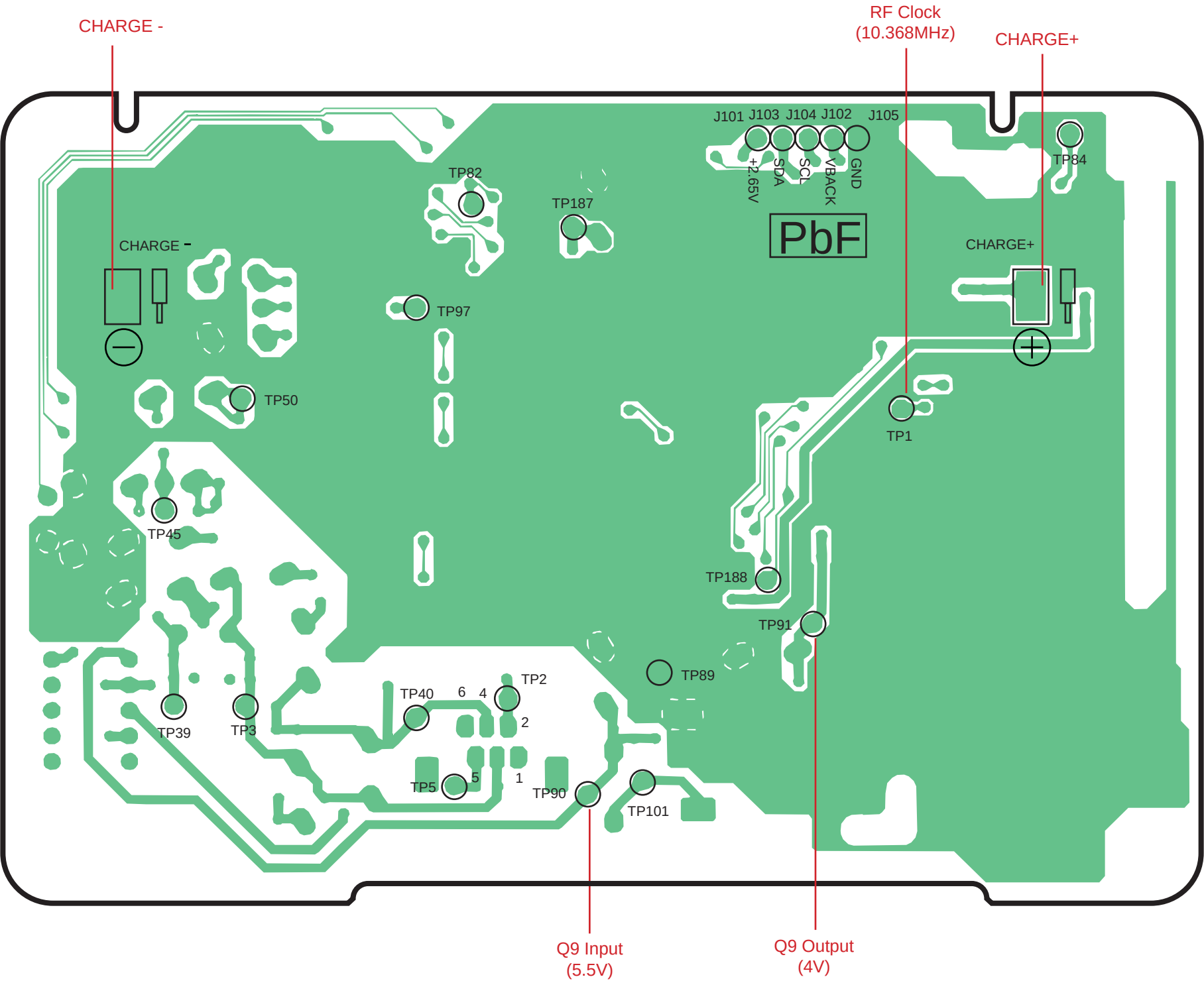
| Part No. | Part Name & Description | Remarks |
|---|---|---|
| PQZZTCD705BX | I2C PCB | |
| PQZZ1CD705BX | RS232C CABLE | |
| PQZZ2CD705BX | CLIP CABLE | |
| PQZZ3CD705BX | DC CABLE | |
| PQZZTCD410NZ | BATCH FILE | |

**Note:**
**See CHECK PROCEDURE (BASE UNIT) (), and CHECK PROCEDURE (HANDSET) ().**

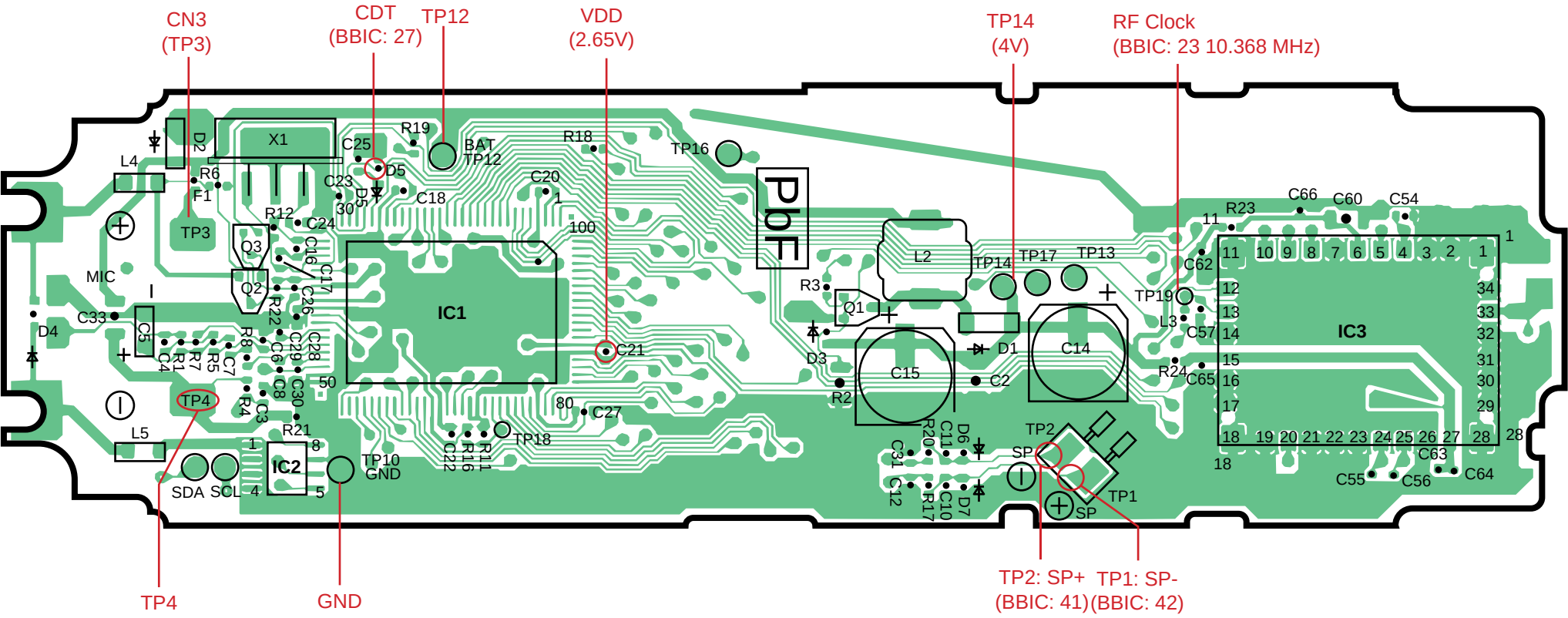
35.6. Memo
36. SCHEMATIC DIAGRAM (BASE UNIT)
37. SCHEMATIC DIAGRAM (HANDSET)
38. SCHEMATIC DIAGRAM (CHARGER UNIT)
39. CIRCUIT BOARD (BASE UNIT)
39.1. Component View
39.2. Flow Solder Side View
40. CIRCUIT BOARD (HANDSET)
40.1. Component View
40.2. Flow Solder Side View
41. CIRCUIT BOARD (CHARGER UNIT)
41.1. Component View
41.2. Flow Solder Side View



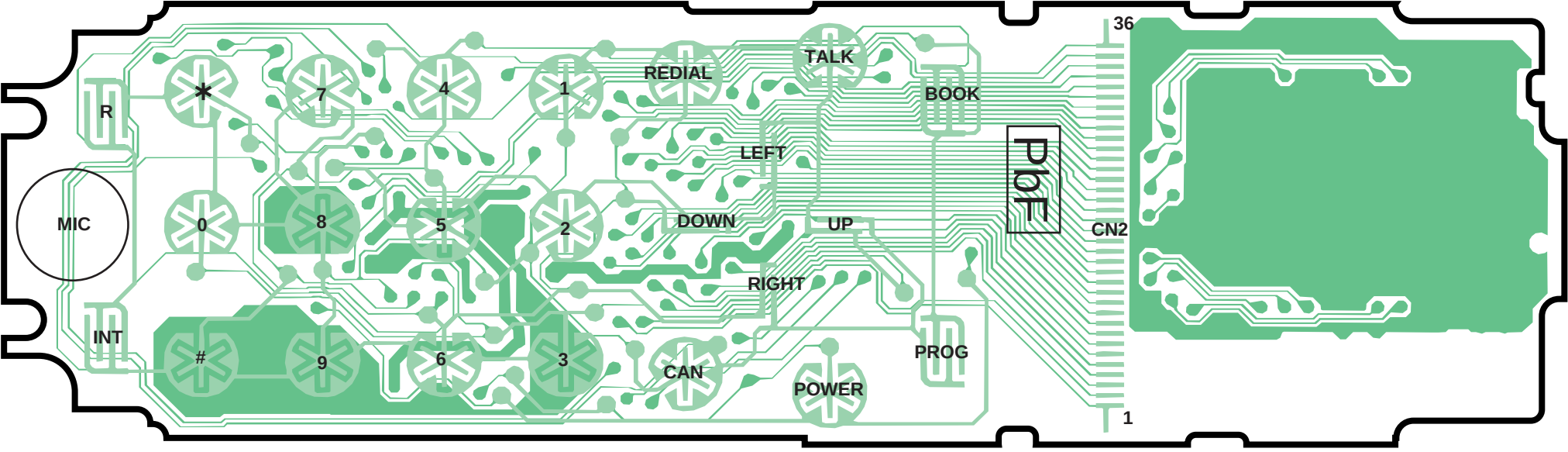

KX-TCD412NZM CIRCUIT BOARD (BASE UNIT) Component View



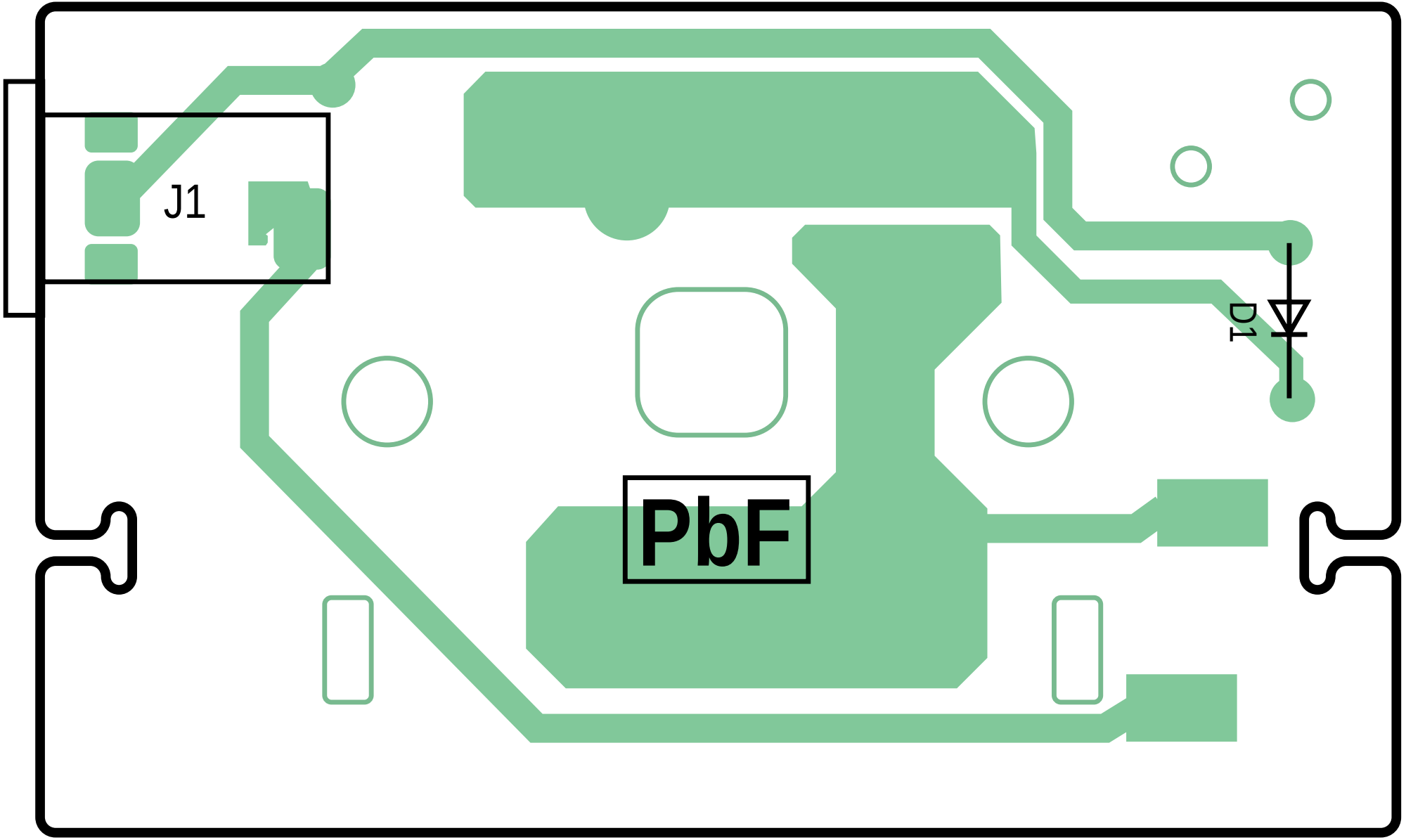

KX-TCD412NZM CIRCUIT BOARD (BASE UNIT) Flow Solder Side View



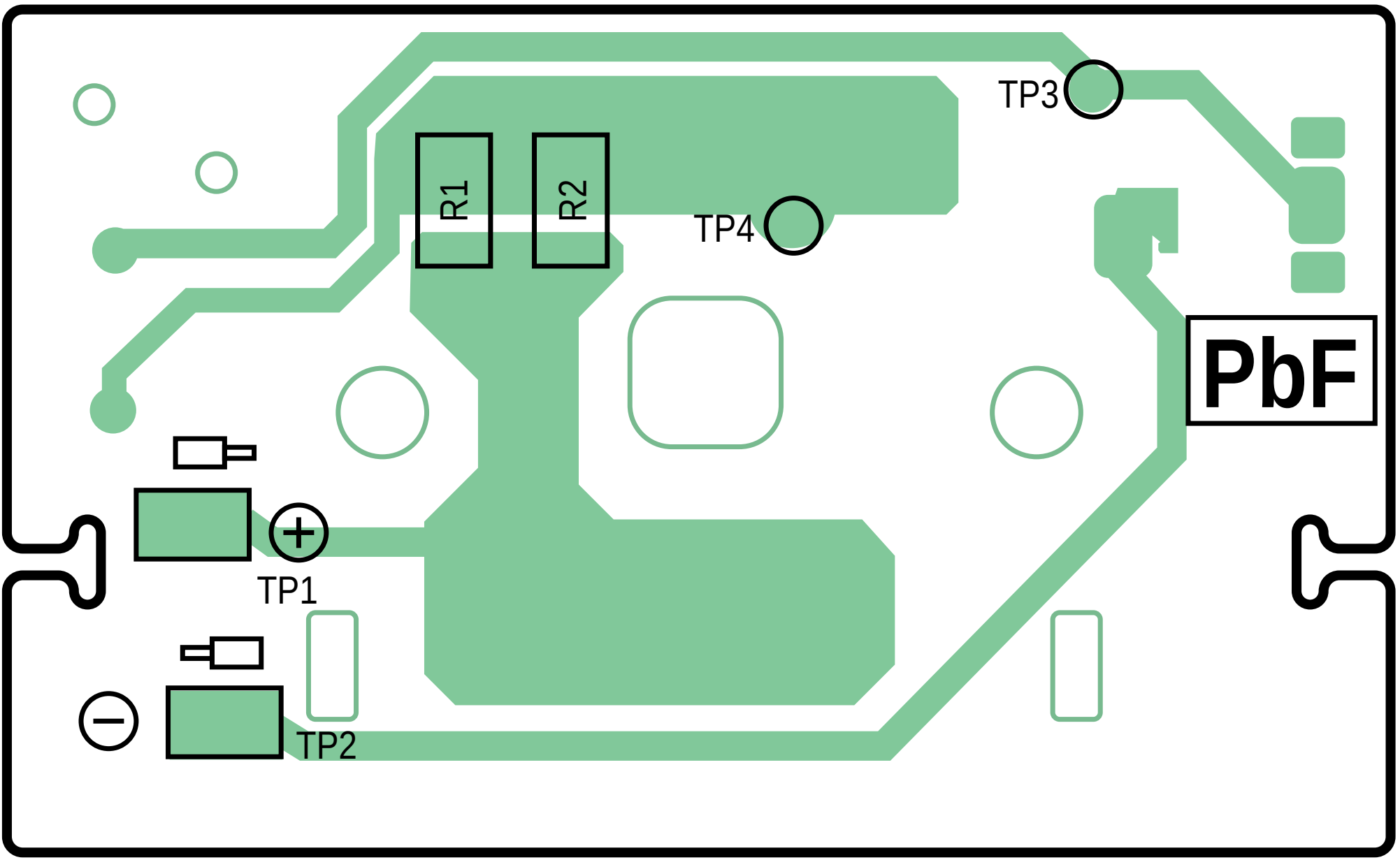

KX-A141NZM&142NZM CIRCUIT BOARD (HANDSET) Component View



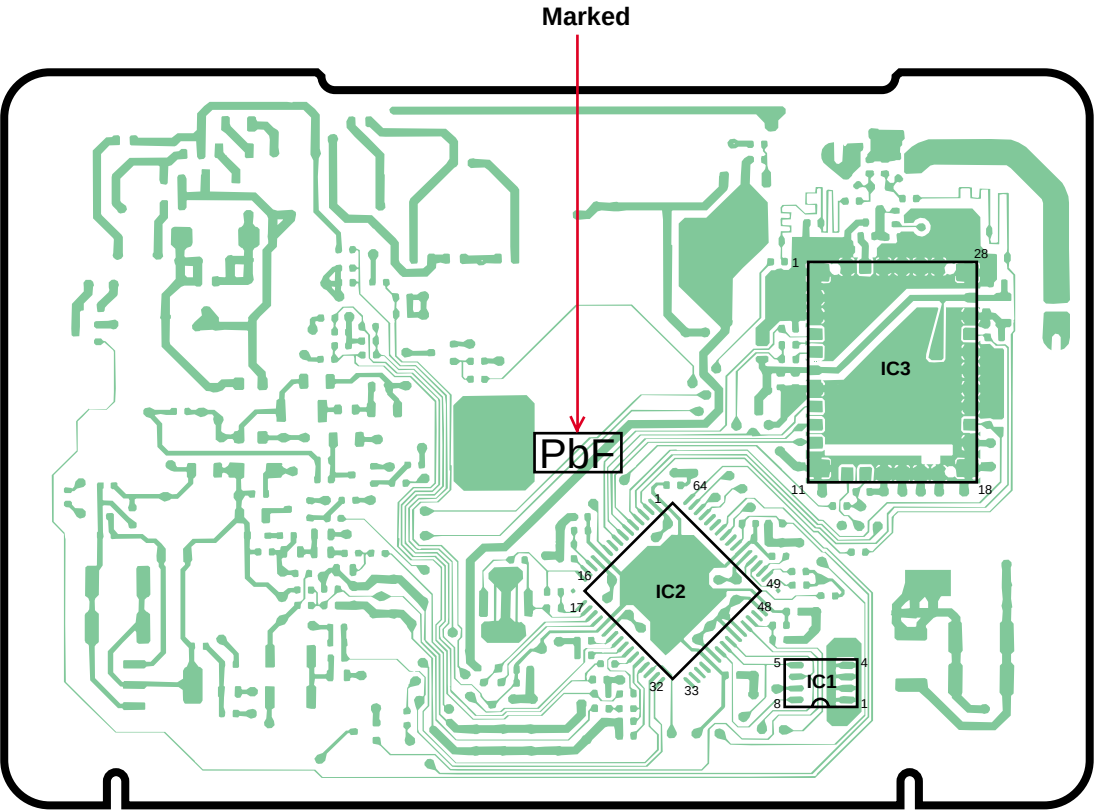

KX-A141NZM&142NZM CIRCUIT BOARD (HANDSET) Flow Solder Side View

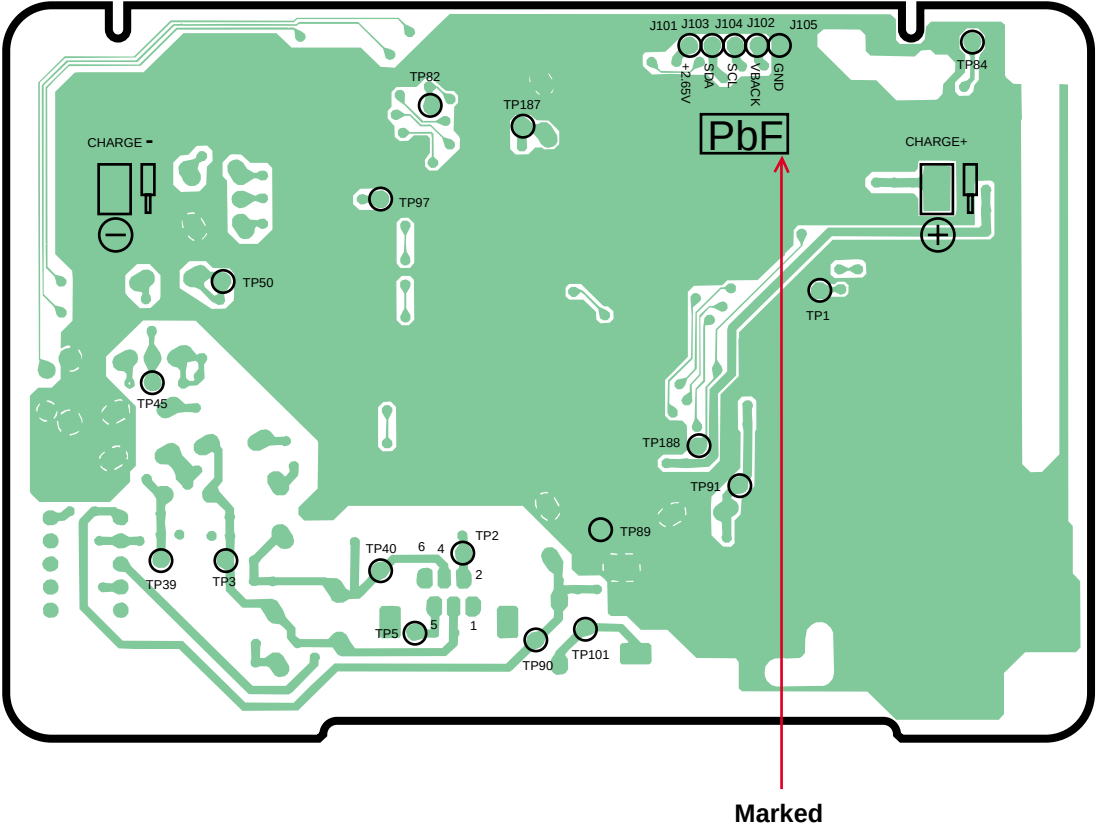


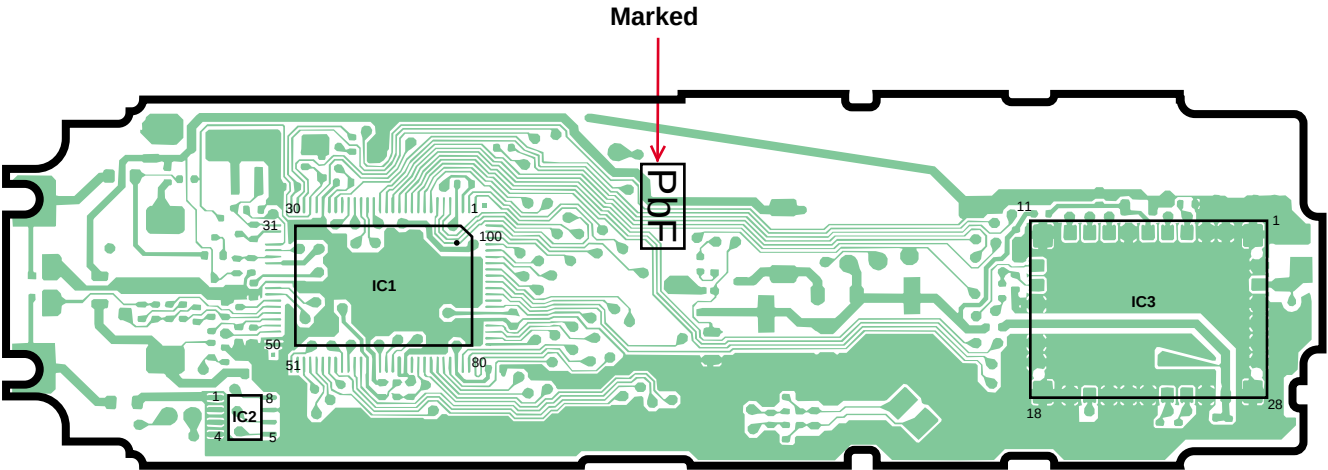

CIRCUIT BOARD (CHARGER UNIT) Component View

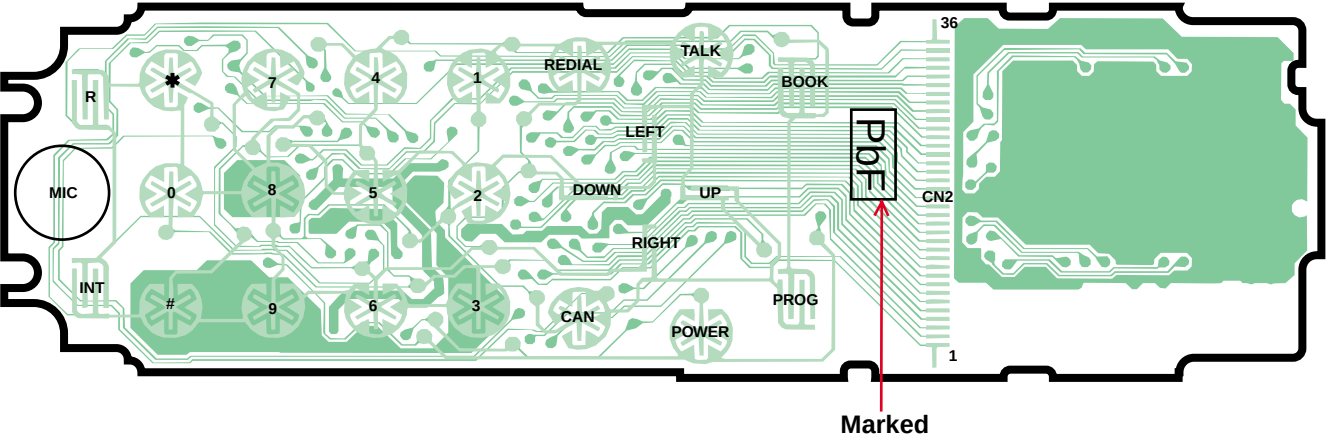


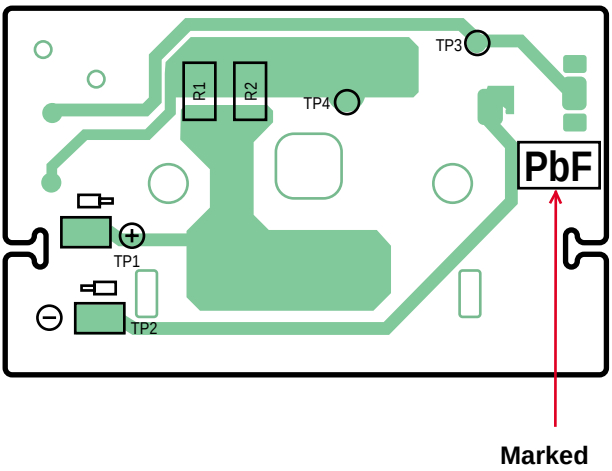

CIRCUIT BOARD (CHARGER UNIT) Flow Solder Side View


Marked
PbF
IC3
1
28
11
18
IC2
1
64
16
17
49
48
32
33
IC1
5
4
8
1

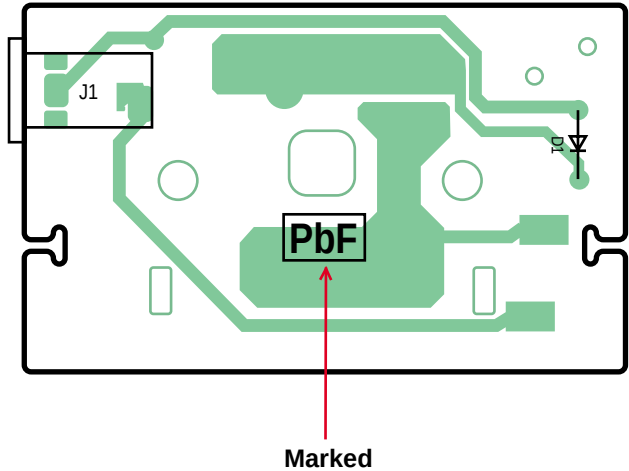

J101
J103
J104
J102
J105
+2.65V
SDA
SCL
VBACK
GND
TP84
TP82
TP187
PbF
CHARGE -
CHARGE+
TP97
TP50
TP1
TP45
TP188
TP91
TP89
TP40
6
4
TP2
2
TP39
TP3
TP5
5
1
TP90
TP101
Marked


Marked
PbF
IC1
30
31
1
100
50
51
80
IC2
1
8
4
5
IC3
11
1
18
28

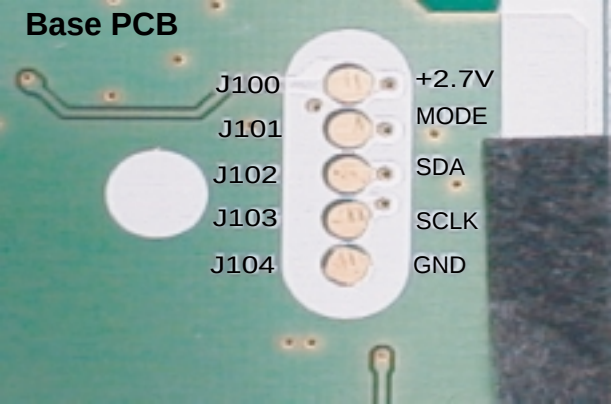

R
MIC
INT
*
7
4
1
0
8
5
2
#
9
6
3
REDIAL
TALK
BOOK
LEFT
DOWN
UP
RIGHT
CAN
POWER
PROG
P101
36
CN2
1
Marked

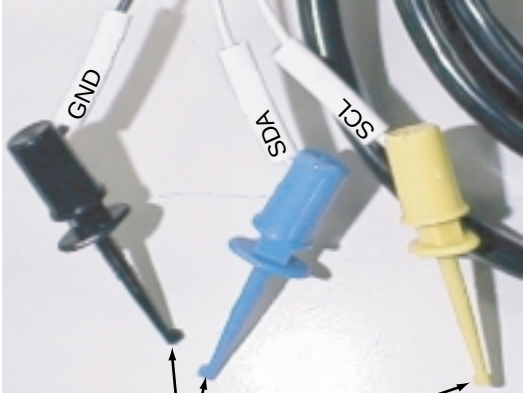


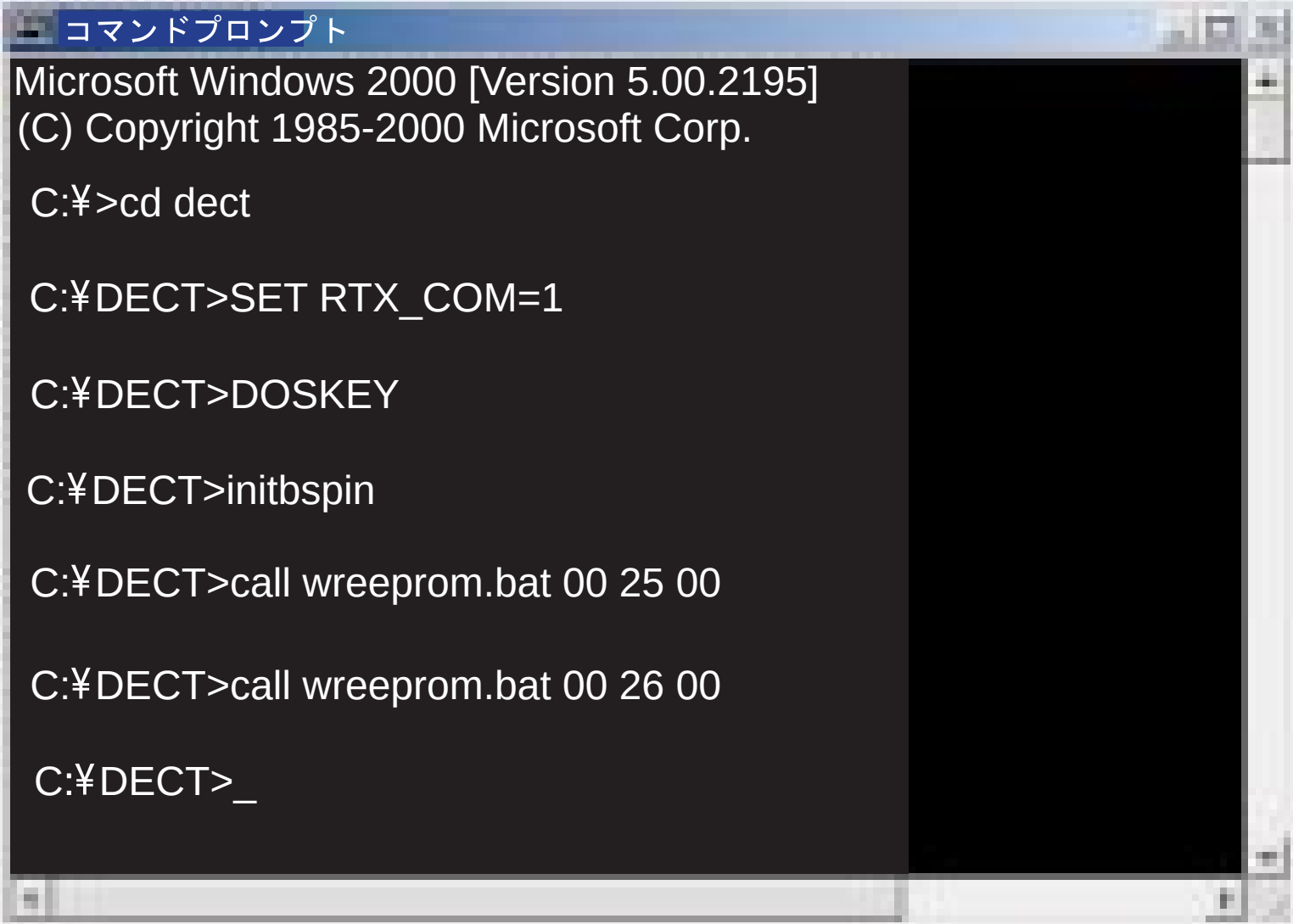

(Component View)



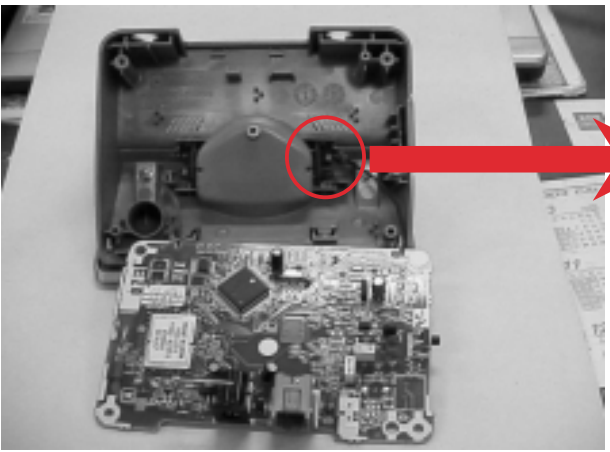

(Flow Solder Side View)

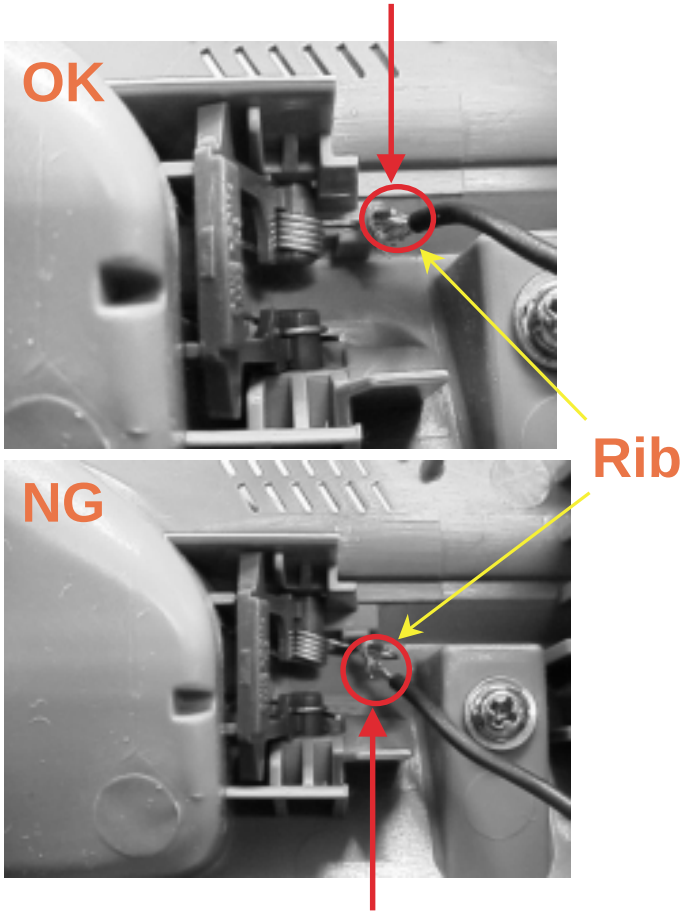

Base PCB
J100
J101
J102
J103
J104
+2.7V
MODE
SDA
SCLK
GND


GND
SDA
SCL
Clip

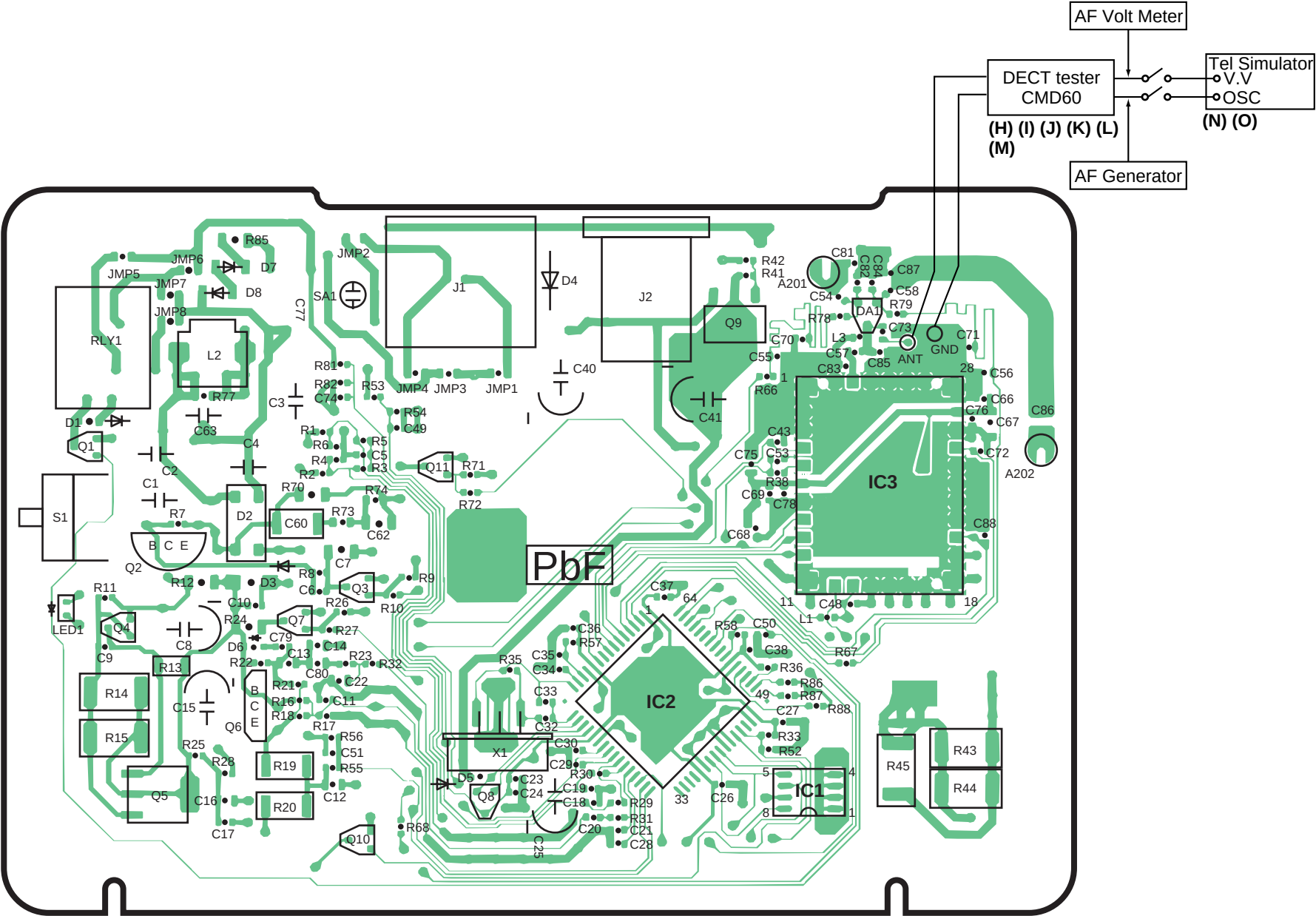

コマンドプロンプト
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.
C:¥>cd dect
C:¥DECT>SET RTX_COM=1
C:¥DECT>DOSKEY
C:¥DECT>initbspin
C:¥DECT>call wreeprom.bat 00 25 00
C:¥DECT>call wreeprom.bat 00 26 00
C:¥DECT>_

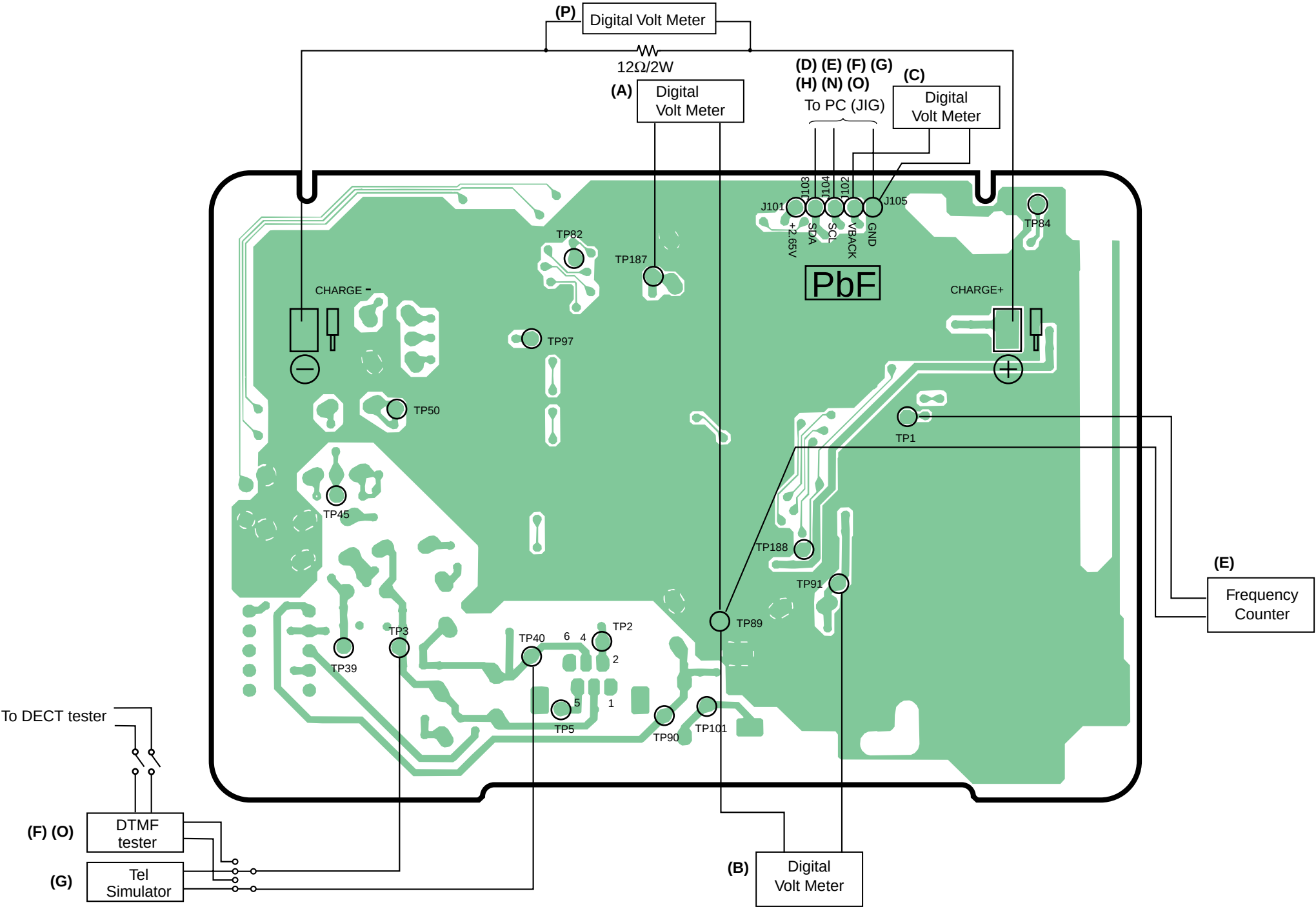
CHG terminal is properly fit in the cabinet.

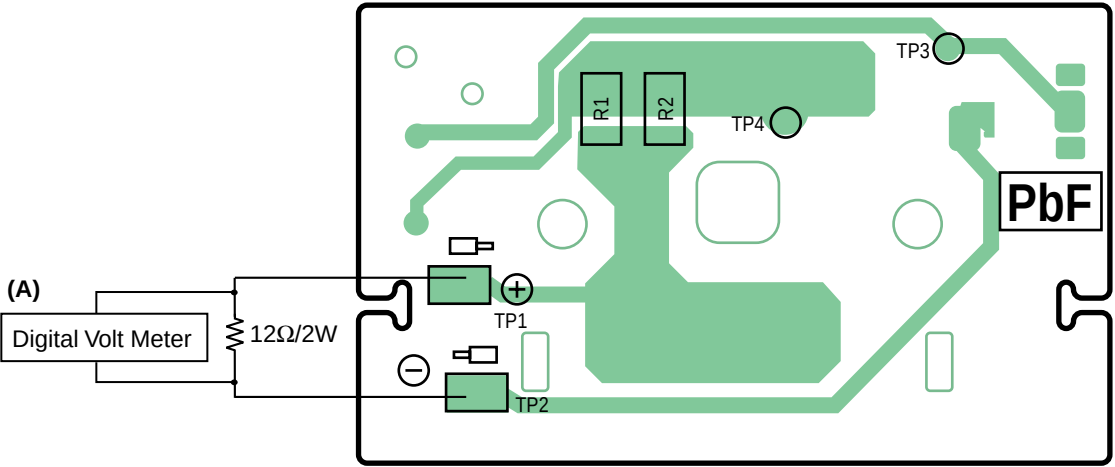


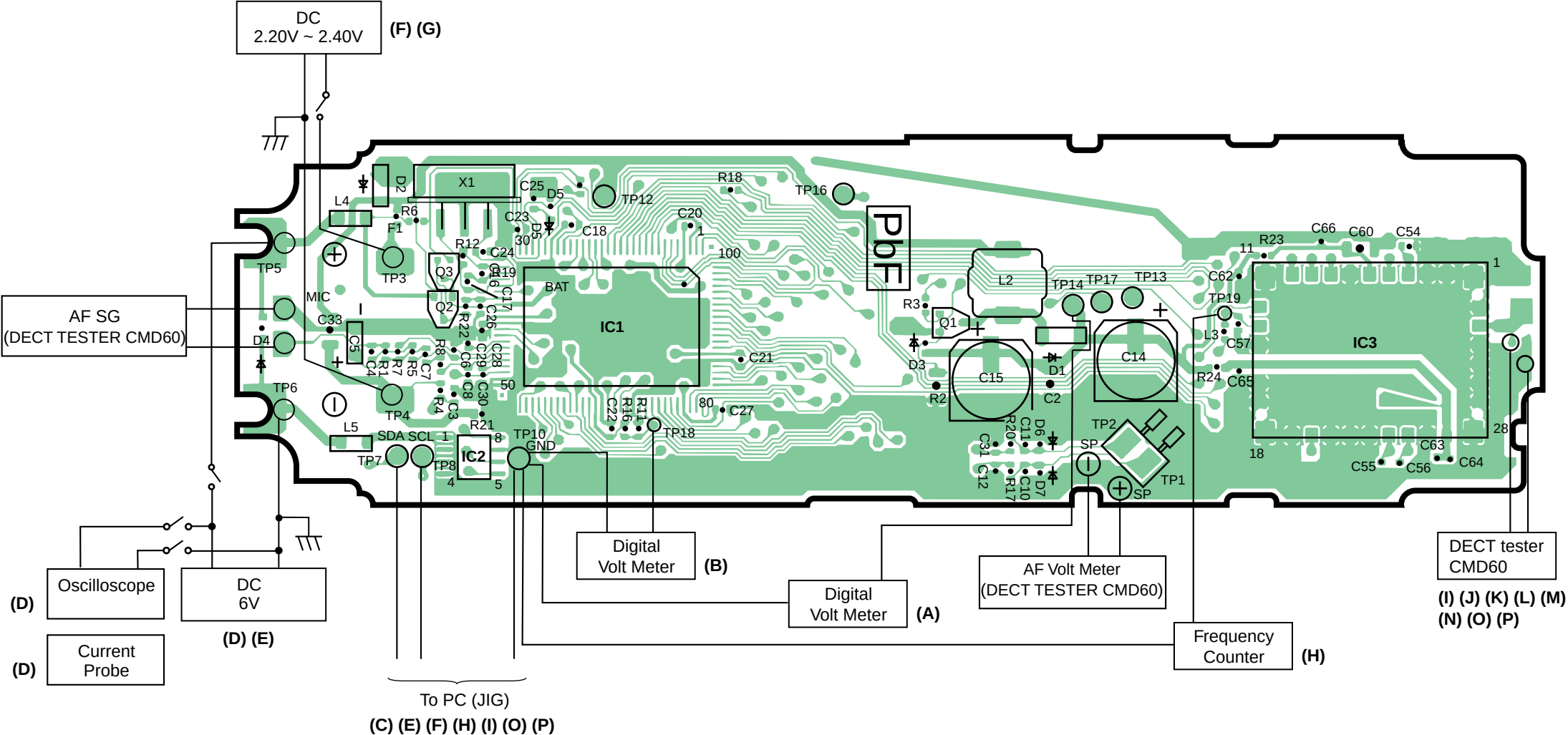


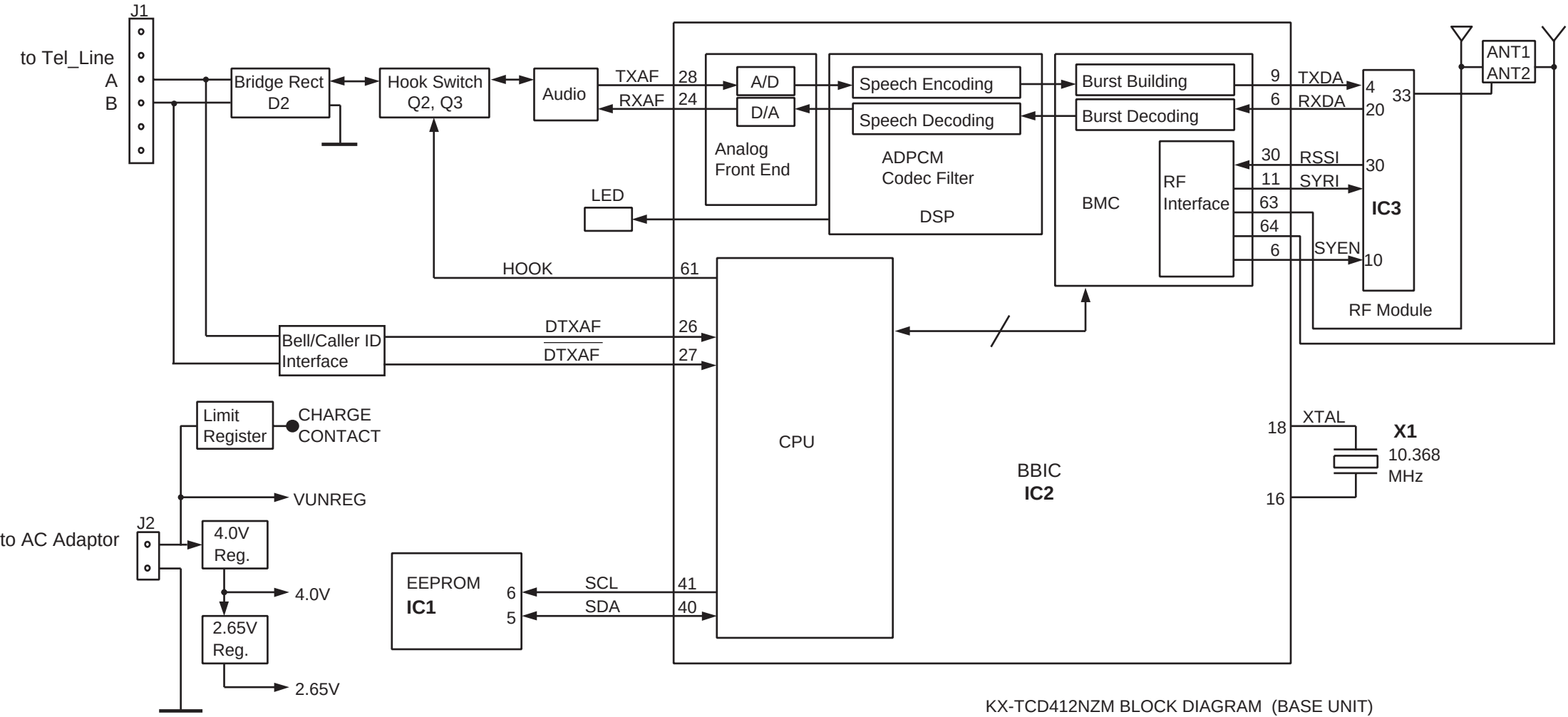

CHG terminal comes out of rib by pulling black lead wire when opening the cabinet and turning the PCB over. The terminal cannot have enough elastic force, cannot have good contact with handset, and it will result in charge problem.


AF Volt Meter
DECT tester
CMD60
Tel Simulator
V.V
OSC
(H) (I) (J) (K) (L)
(M)
(N) (O)
AF Generator
PbF
IC1
IC2
IC3
RLY1
L2
J1
J2
SA1
S1
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
D1
D2
D3
D4
D5
D6
D7
D8
LED1
X1
L1
L3
ANT
GND
A201
A202
DA1
JMP1
JMP2
JMP3
JMP4
JMP5
JMP6
JMP7
JMP8
B C E

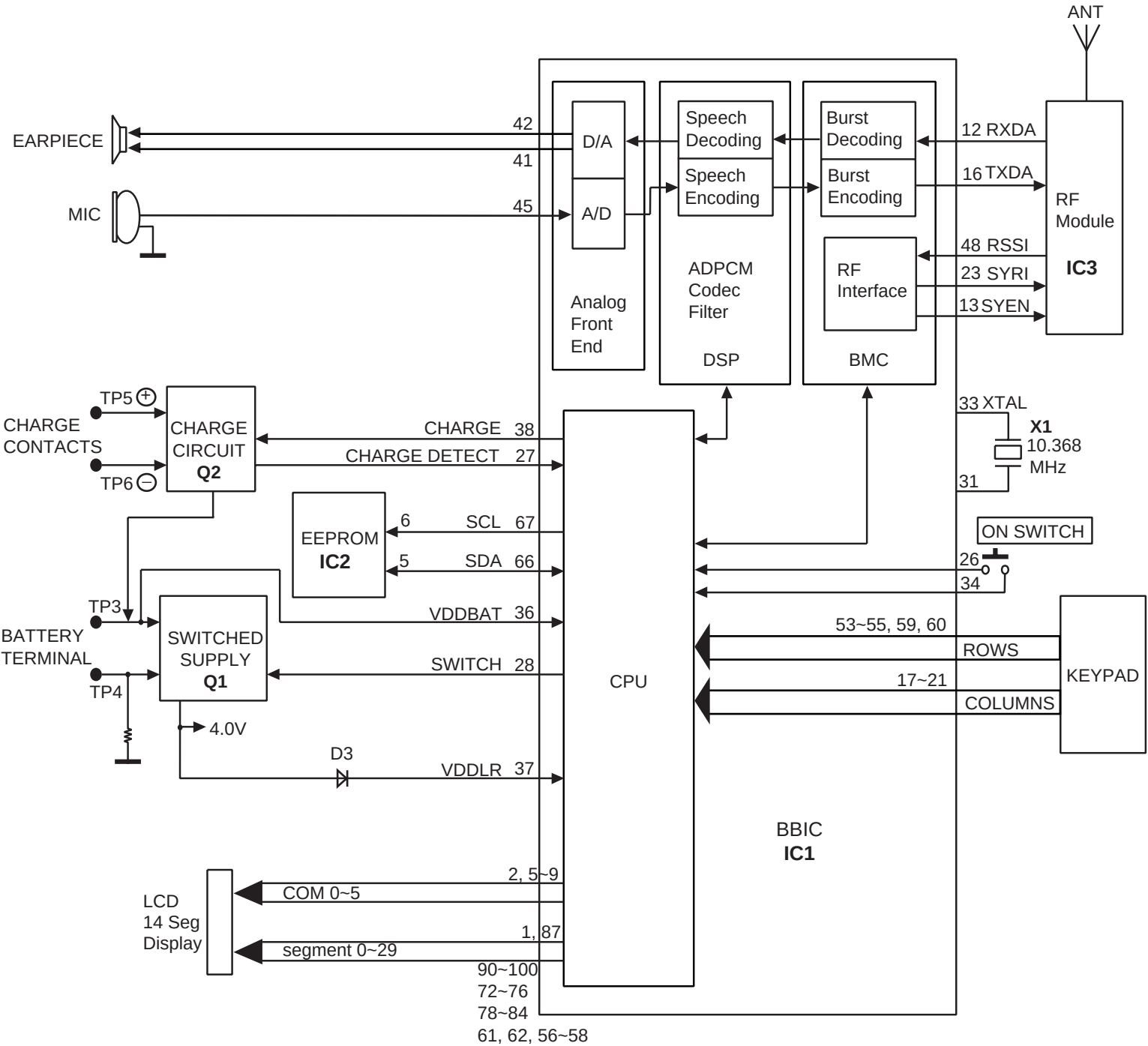

(P)
Digital Volt Meter
12Ω/2W
(A)
Digital
Volt Meter
(D) (E) (F) (G)
(H) (N) (O)
To PC (JIG)
(C)
Digital
Volt Meter
J101
J105
+2.65V
SDA
SCL
VBACK
GND
PbF
TP82
TP187
TP84
CHARGE -
CHARGE+
TP97
TP50
TP1
TP45
TP188
TP91
TP89
(E)
Frequency
Counter
TP3
TP39
TP40
6
4
TP2
2
5
1
TP5
TP90
TP101
To DECT tester
(F) (O)
DTMF
tester
(G)
Tel
Simulator
(B)
Digital
Volt Meter


(A)
Digital Volt Meter
12Ω/2W
TP1
TP2
TP3
TP4
R1
R2
PbF

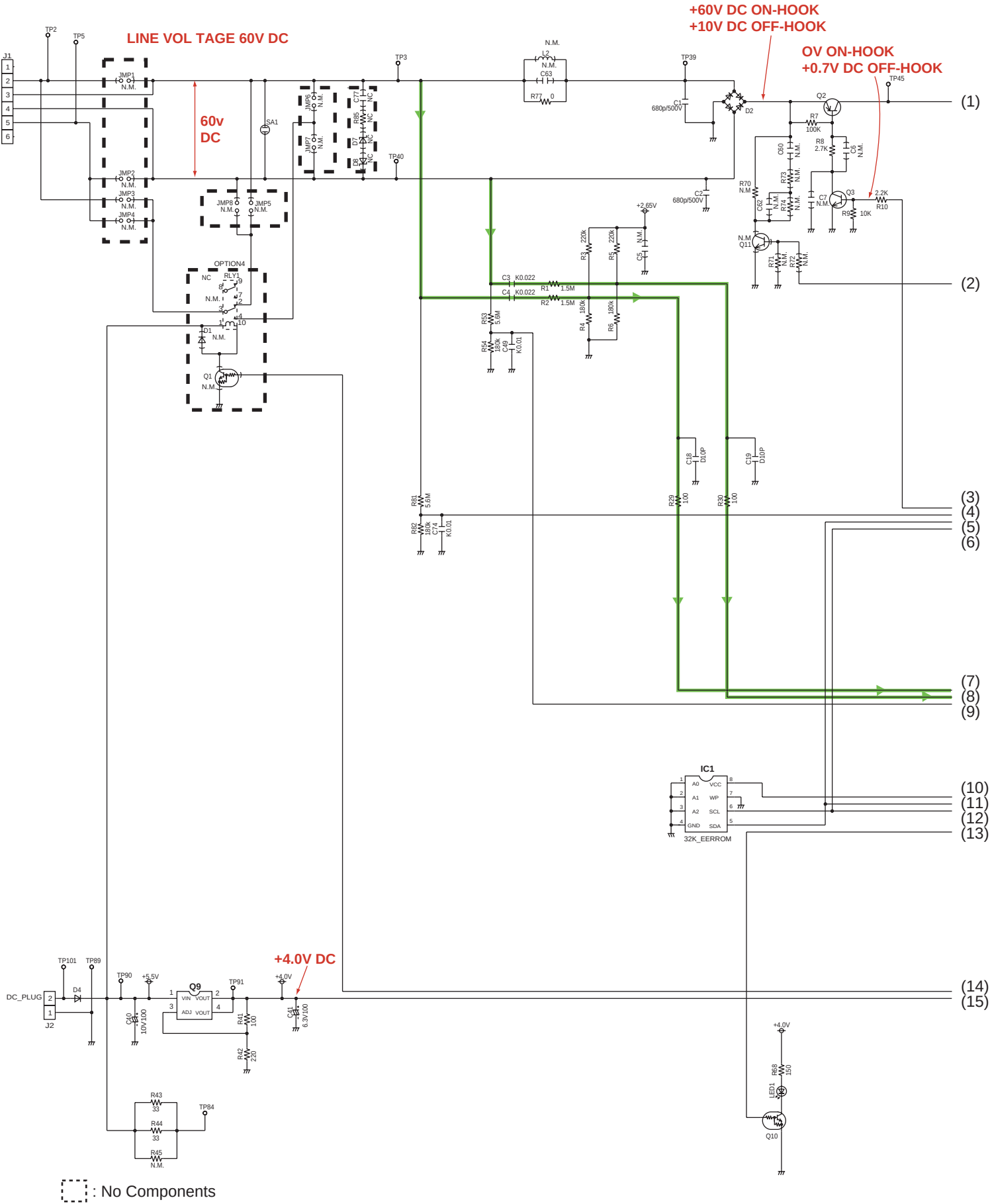

DC
2.20V ~ 2.40V
(F) (G)
AF SG
(DECT TESTER CMD60)
Oscilloscope
(D)
Current
Probe
(D)
DC
6V
(D) (E)
To PC (JIG)
(C) (E) (F) (H) (I) (O) (P)
Digital
Volt Meter
(B)
Digital
Volt Meter
(A)
AF Volt Meter
(DECT TESTER CMD60)
Frequency
Counter
(H)
DECT tester
CMD60
(I) (J) (K) (L) (M)
(N) (O) (P)
IC1
IC2
IC3
BAT
MIC
SDA SCL
GND
SP
SP
Pb-F
X1
L2
L3
L4
L5
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP10
TP12
TP13
TP14
TP16
TP17
TP18
TP19
D1
D2
D3
D4
D5
D6
D7
Q1
Q2
Q3
F1
R1
R2
R3
R4
R5
R6
R7
R8
R11
R12
R16
R17
R18
R19
R20
R21
R22
R23
R24
C1
C2
C3
C4
C5
C6
C7
C8
C10
C11
C12
C14
C15
C17
C18
C20
C21
C22
C23
C24
C25
C26
C27
C28
C29
C30
C31
C33
C54
C55
C56
C57
C60
C62
C63
C64
C65
C66
1
11
18
28
30
50
80
100

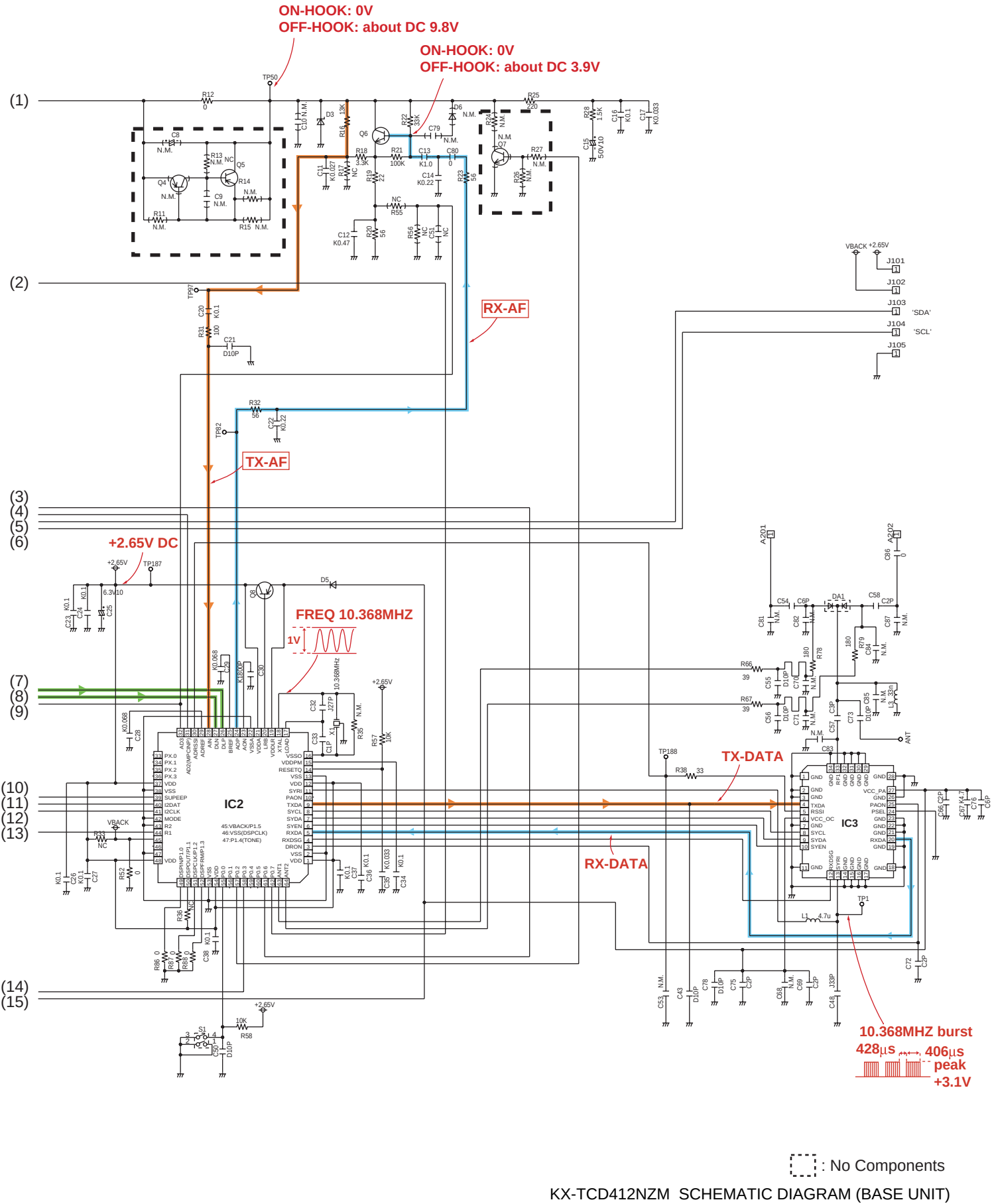



KX-TCD412NZM BLOCK DIAGRAM (BASE UNIT)



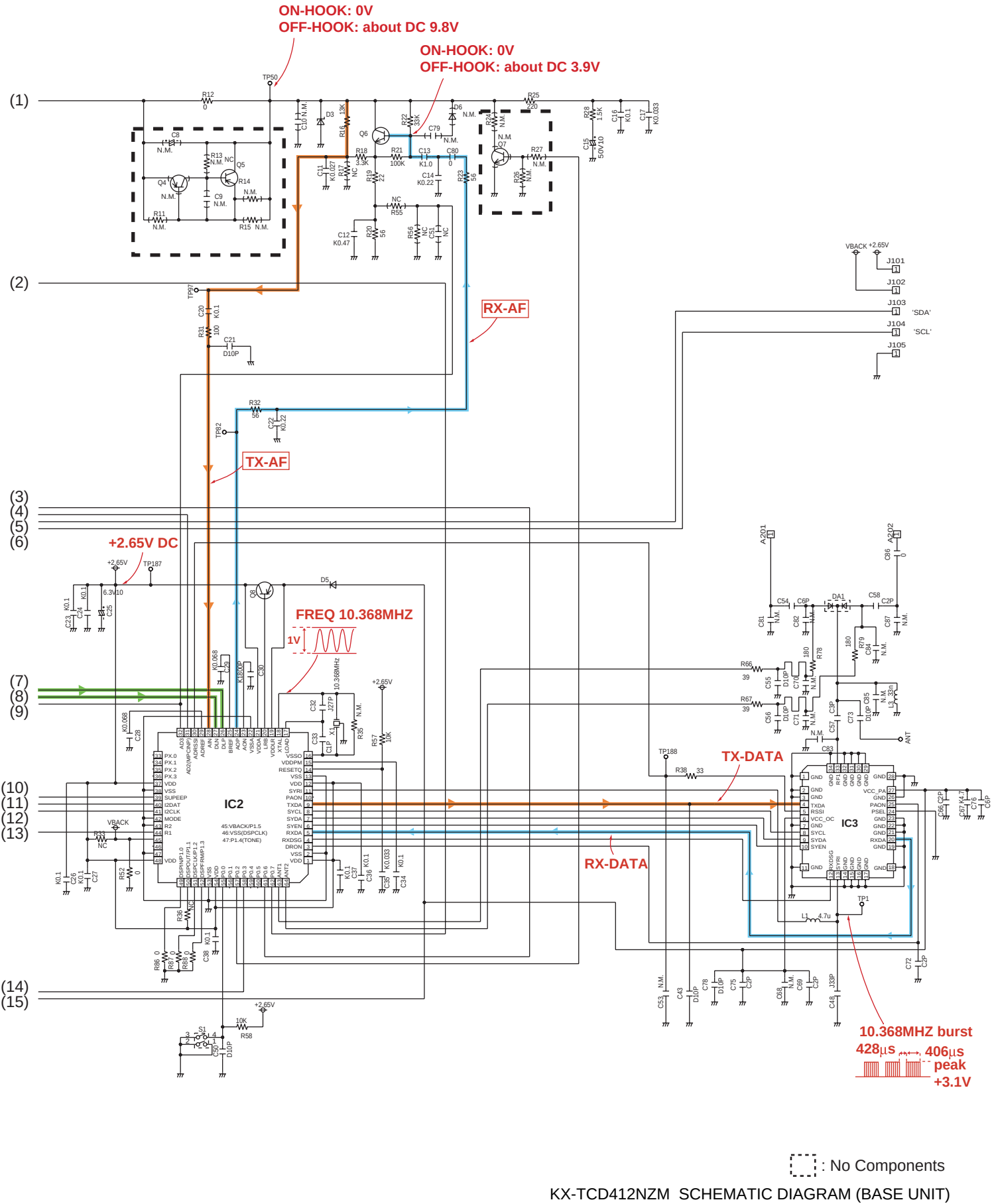

KX-A141NZM&142NZM BLOCK DIAGRAM (HANDSET)


LINE VOL TAGE 60V DC
60v
DC
+60V DC ON-HOOK
+10V DC OFF-HOOK
OV ON-HOOK
+0.7V DC OFF-HOOK
+4.0V DC
J1
J2
DC_PLUG
JMP1
JMP2
JMP3
JMP4
JMP5
JMP6
JMP7
JMP8
N.M.
SA1
OPTION4
RLY1
NC
D1
Q1
D2
Q2
Q3
Q10
Q11
Q9
D4
D7
D8
L2
C63
R77
C1
C2
R7
100K
R8
2.7K
R9
10K
R10
2.2K
R70
R71
R72
R73
R74
C7
C60
C62
C6
C5
R3
R5
R4
R6
220k
180k
+2.65V
C3
C4
K0.022
R1
R2
1.5M
R53
R54
5.6M
180k
C49
K0.01
C18
C19
D10P
R81
R82
R29
R30
100
C74
IC1
A0
A1
A2
GND
VCC
WP
SCL
SDA
32K_EERROM
R68
150
LED1
R41
R42
220
C40
C41
10V100
6.3V100
+5.5V
R43
R44
R45
33
TP2
TP3
TP5
TP39
TP40
TP45
TP84
TP89
TP90
TP91
TP101
(1)
(2)
(3)
(4)
(5)
(6)
(7)
(8)
(9)
(10)
(11)
(12)
(13)
(14)
(15)
: No Components



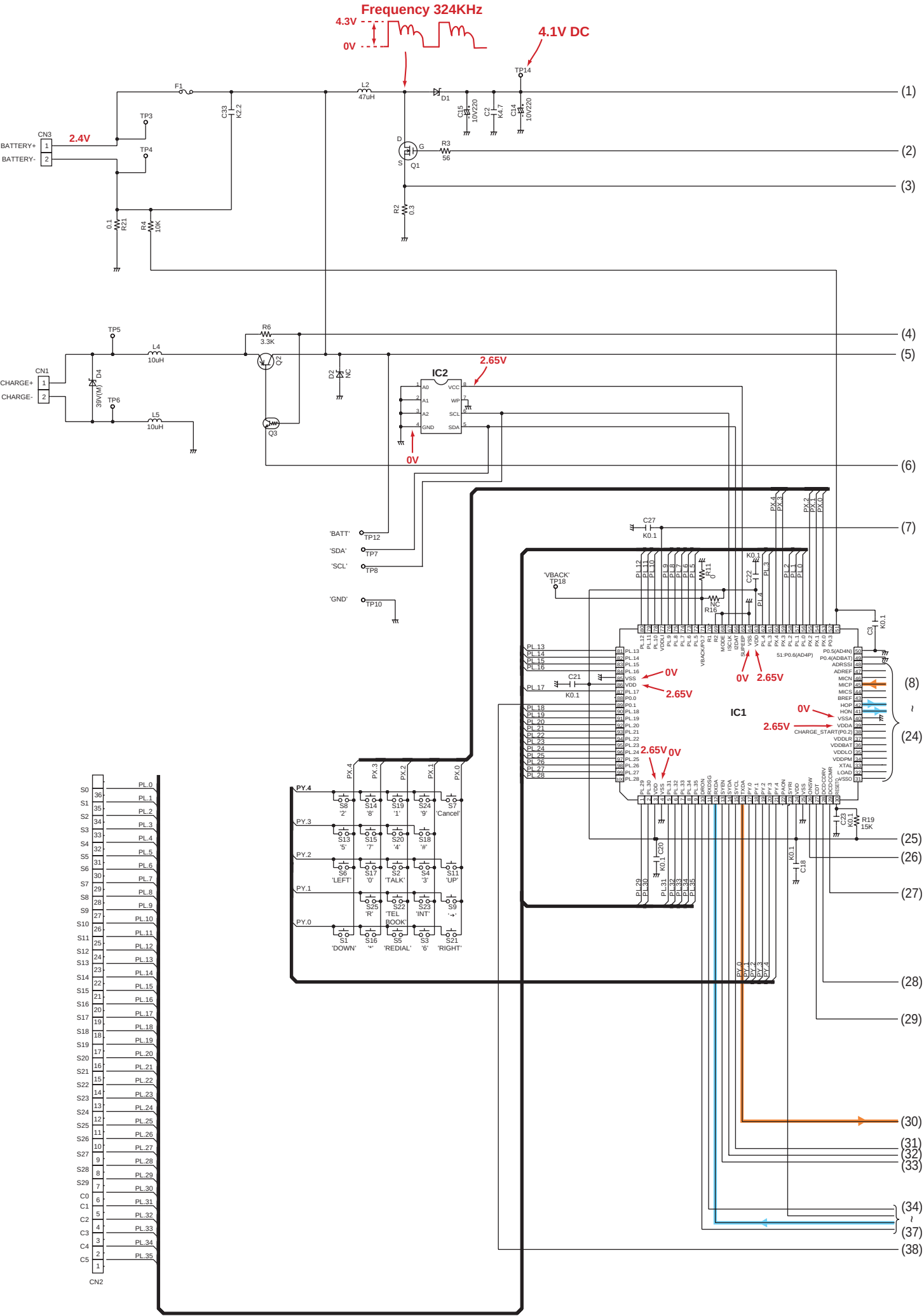

: No Components

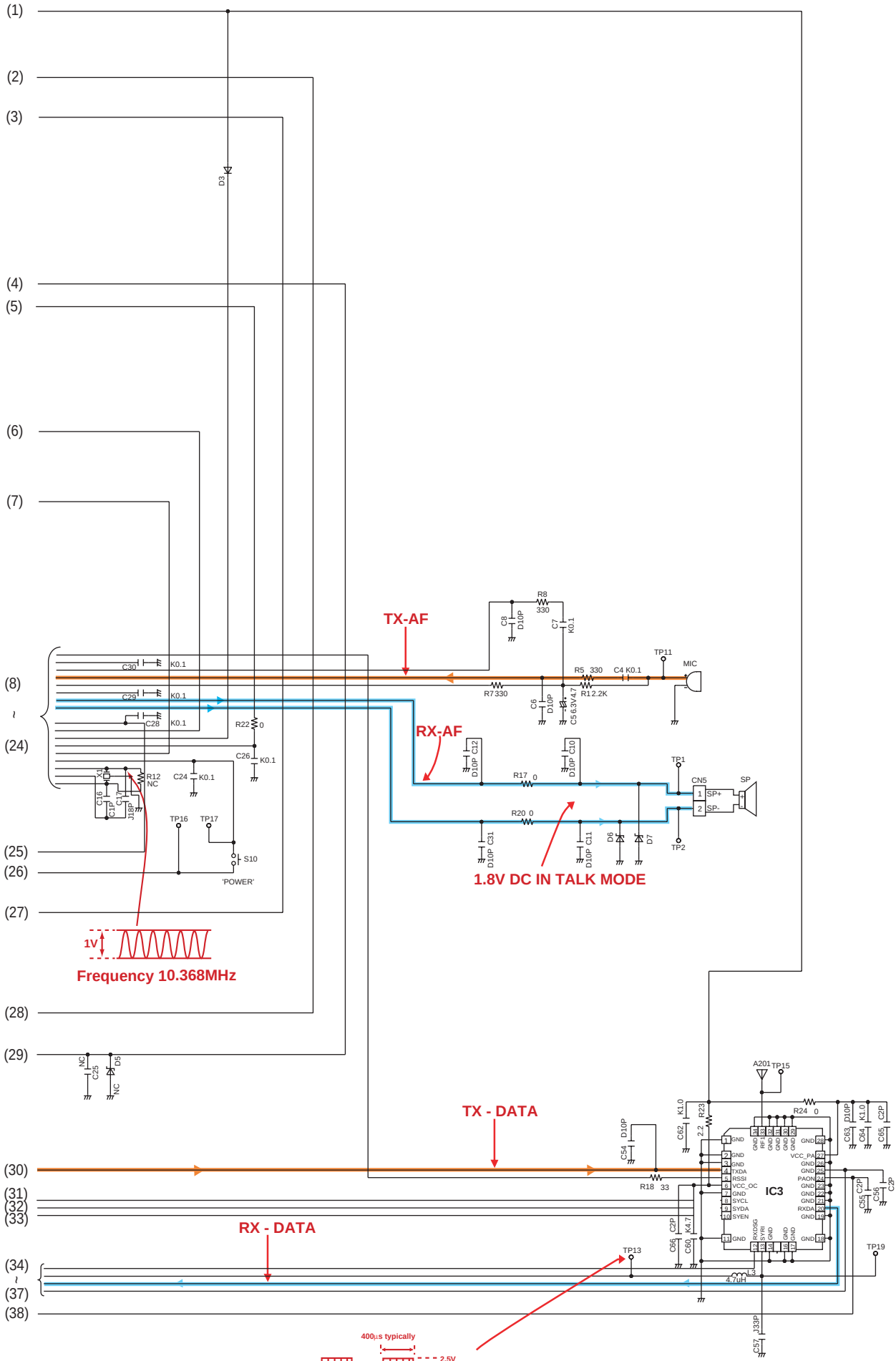
KX-TCD412NZM SCHEMATIC DIAGRAM (BASE UNIT)

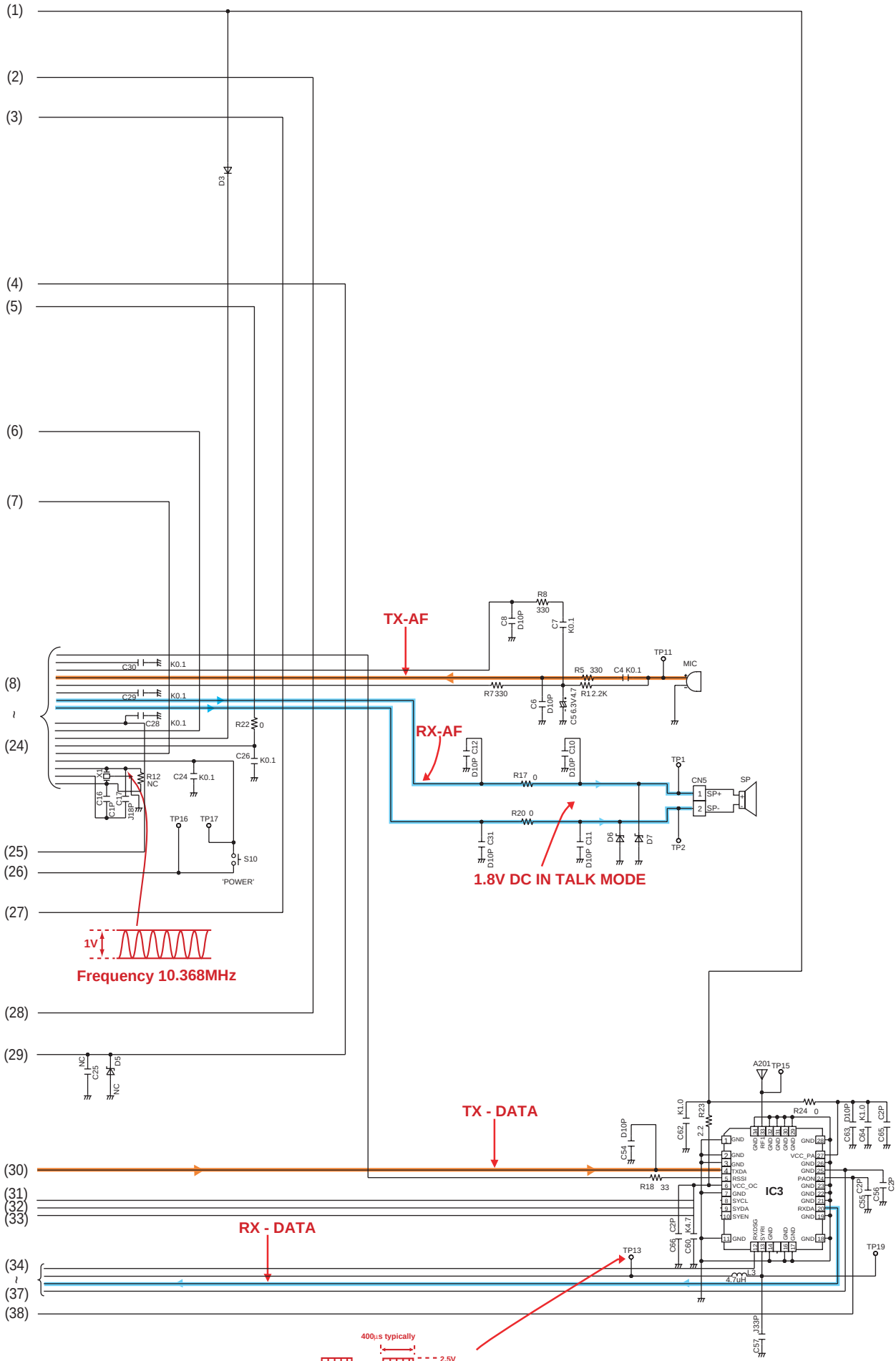


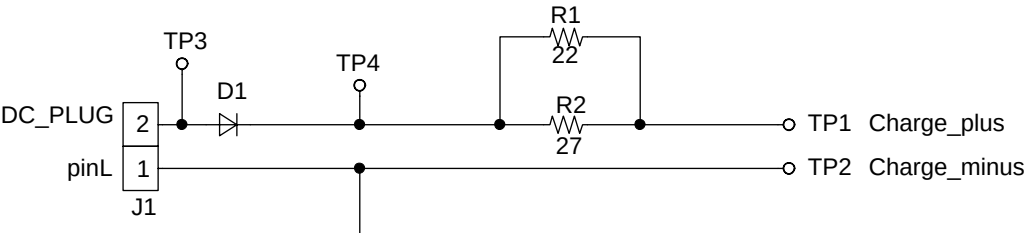

: No Components

KX-TCD412NZM SCHEMATIC DIAGRAM (BASE UNIT)


Frequency 324KHz
4.3V
0V
4.1V DC
TP14
F1
L2
47uH
D1
C15
10V220
C2
K4.7
C14
10V220
CN3
2.4V
BATTERY+
BATTERY-
TP3
TP4
C33
K2.2
D
G
S
Q1
R3
56
R2
0.3
0.1
R21
R4
10K
(1)
(2)
(3)
TP5
L4
10uH
R6
3.3K
Q2
CN1
CHARGE+
CHARGE-
D4
39V(M)
TP6
L5
10uH
Q3
D2
NC
IC2
2.65V
0V
A0
A1
A2
GND
VCC
WP
SCL
SDA
(4)
(5)
(6)
'BATT'
TP12
'SDA'
TP7
'SCL'
TP8
'GND'
TP10
C27
K0.1
'VBACK'
TP18
R11
0
R16
NC
C22
PL.4
C3
K0.1
IC1
0V
2.65V
C21
K0.1
CHARGE_START(P0.2)
C23
K0.1
R19
15K
C20
K0.1
C18
K0.1
(7)
(8)
(24)
(25)
(26)
(27)
(28)
(29)
(30)
(31)
(32)
(33)
(34)
(37)
(38)
PX.4
PX.3
PX.2
PX.1
PX.0
PY.4
PY.3
PY.2
PY.1
PY.0
S8 '2'
S14 '8'
S19 '1'
S24 '9'
S7 'Cancel'
S13 '5'
S15 '7'
S20 '4'
S18 '#'
S6 'LEFT'
S17 '0'
S2 'TALK'
S4 '3'
S11 'UP'
S25 'R'
S22 'TEL BOOK'
S23 'INT'
S9 '*'
S1 'DOWN'
S16 '*'
S5 'REDIAL'
S3 '6'
S21 'RIGHT'
CN2


(1)
(2)
(3)
(4)
(5)
(6)
(7)
(8)
(24)
(25)
(26)
(27)
(28)
(29)
(30)
(31)
(32)
(33)
(34)
(37)
(38)
TX-AF
RX-AF
TX - DATA
RX - DATA
1.8V DC IN TALK MODE
1v
Frequency 10.368MHz
400µs typically
2.5V
0.5V
0V
'POWER'
MIC
SP
IC3
TP1
TP2
TP11
TP13
TP15
TP16
TP17
TP19
A201
CN5
S10
D3
D5
D6
D7
C4 K0.1
C5 6.3V4.7
C6 D10P
C7 K0.1
C8 D10P
C10 D10P
C11 D10P
C12 D10P
C16
C17
C24 K0.1
C25
C26 K0.1
C28 K0.1
C29 K0.1
C30 K0.1
C31 D10P
C52 2.2
C53 K4.7
C54 D10P
C55 C2P
C56 C2P
C57 J33P
C60 C2P
C62 2.2
C63 C2P
C64 K1.0
C65 C2P
C66 C2P
J33P
L3 4.7uH
R5 330
R7 330
R8 330
R12 2.2K
R12 NC
R17 0
R18 33
R20 0
R22 0
R23 K1.0
R24 0
SP+
SP-
X4
NC


(1)
(2)
(3)
(4)
(5)
(6)
(7)
(8)
(24)
(25)
(26)
(27)
(28)
(29)
(30)
(31)
(32)
(33)
(34)
(37)
(38)
TX-AF
RX-AF
TX - DATA
RX - DATA
1.8V DC IN TALK MODE
1v
Frequency 10.368MHz
400µs typically
2.5V
0.5V
0V
'POWER'
MIC
SP
IC3
TP1
TP2
TP11
TP13
TP15
TP16
TP17
TP19
A201
CN5
S10
D3
D5
D6
D7
C4 K0.1
C5 6.3V4.7
C6 D10P
C7 K0.1
C8 D10P
C10 D10P
C11 D10P
C12 D10P
C16
C17
C24 K0.1
C25
C26 K0.1
C28 K0.1
C29 K0.1
C30 K0.1
C31 D10P
C52 2.2
C53 K4.7
C54 D10P
C55 C2P
C56 C2P
C57 J33P
C60 C2P
C62 2.2
C63 C2P
C64 K1.0
C65 C2P
C66 C2P
J33P
L3 4.7uH
R5 330
R7 330
R8 330
R12 2.2K
R12 NC
R17 0
R18 33
R20 0
R22 0
R23 K1.0
R24 0
SP+
SP-
X4
NC




SCHEMATIC DIAGRAM (CHARGER UNIT)